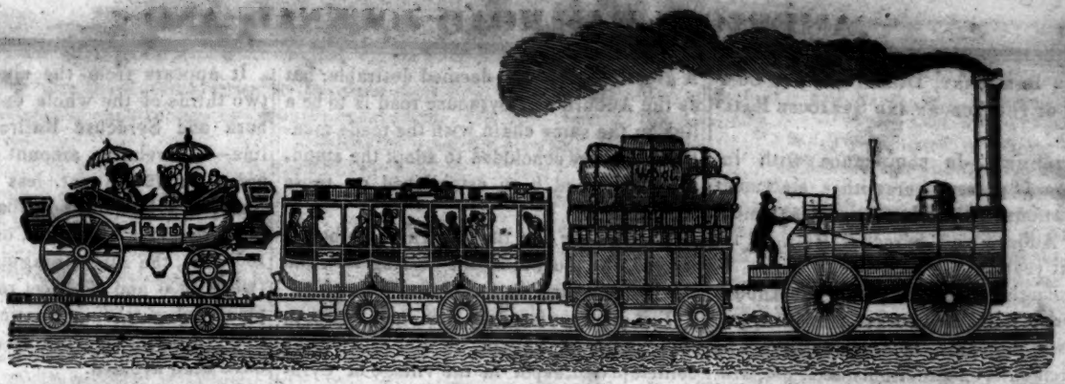

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, MAY 7, 1836.

New Work on Locomotive Engines.—We have in press, and will shortly republish from the London edition, a valuable work on Locomotive Engines, by the Chev. F. M. G. de Pambour, formerly a student of the Ecole Polytechnique, late of the Royal Artillery, on the staff in the French Service, Knight of the Royal Order of the Legion d'Honneur, etc., during a residence in England for scientific purposes.

Auburn and Syracuse Railroad.—The Report of E. F. Johnson, Esq., Chief Engineer of the Auburn and Syracuse Railroad, will be found in this number of the Journal.

Pambour on Locomotive Engines, on Railways.—We have received a valuable work, by the Chevalier de Pambour, on Locomotive Engines. It is the result of a series of experiments, recently made by him in England, with a view of obtaining more correct information in relation to the power and utility of Locomotive Engines on Railroads.

The work contains about 360 pages, small octavo, with four plates, exhibiting a Locomotive Engine complete, and also in detail, or each part separate.

The cost of the English edition is $4, which will prevent its coming into general use in this country, and we are therefore induced to re-publish the book, in a form which will bring it before the Railroad community at a much less cost.

The following extract gives a good idea of the work:—

"The plan we intend to follow in the course of this work will, we hope, render it both clear and methodical.

"We shall begin by a description of a locomotive engine; and we shall acquaint the reader with the means by which the pressure of steam may be accurately measured, so that, before we go any farther, he will be able to see the elements from which the power of the mover we are to employ is derived.

"Our attention will afterwards be directed towards the resistances which that mover must overcome in its motion, so that we shall successively endeavor to discover as well the resistance of the waggons, as that which belongs to the engine itself, either when it moves alone, or when it draws a load after it.

"These points first established, we shall pass to the general theory of the movement of locomotive engines, and we shall lay down the formulæ by which to determine, *a priori*, either the speed the engine will acquire with a given load, the load it will draw at a given speed, or the proportions which are to be adopted in its construction to make it answer any intended purpose.

"After that, we shall have to consider several additional dispositions proper to the engine, which may exercise more or less influence on the expected effect; and we shall then also treat of some external circumstances, the result of which may be of the same nature.

"Lastly, we shall speak of the fulcrum of the motion, or of the force of adhesion of the wheel to the rails; and our last chapter will contain a calculation of the quantity of fuel required for the traction of given loads.

"These inquiries will be sufficient to solve all the most important questions concerning the application of locomotive engines to the draft of loads.

"They will sometimes be necessarily subdivided into several branches, and require calculation and theoretical illustrations, of more or less extent, though always plain and easy, and a series of experiments more or less numerous; but we shall take care to maintain, all along our work, the classification we at present lay down."

Sugar from Urine.—It has long been ascertained, that the urine of persons afflicted with Diabetes, contained pure sugar. The following account of a loaf of sugar from such a source, shows that the manufacture has increased. Indeed, the sugar would, for cheapness of the *raw material*, rival that either from the beet, cane, or Indian corn; but unfortunately, Diabetes is a disease of rare occurrence, and with the exception of a few local instances, we are convinced that the supply from this source may be considered as absolutely nothing.

M. Peligot, a chemist, has presented to the *Societie Philomathique* a loaf of sugar, which he had extracted from the *urine* of a patient now in the hospital of *La Charite*, afflicted with the Saccharine Diabetes.—This man voids about 20 quarts of urine a day, of which 5 parts in every 100 is sugar.

To the President, Directors, and Company of the Auburn and Syracuse Railroad.

Gentlemen,—In compliance with instructions, I present herewith a statement of operations in the Engineer Department of the Auburn and Syracuse Railroad for the past year.

The Engineer Department of the Auburn and Syracuse Railroad was organized, and surveys commenced, in April, 1835. The measurements, examinations, &c., preparatory to the final location, occupied the succeeding six months. On the 15th day of October, 1835, proposals were received for the grading, bridges, and culverts, including the labor and materials of every description necessary to complete the roadbed.

In December and January, the excavation was commenced on a few of the more expensive sections, with a view of advancing the work upon them, and to avoid thereby any delay in the opening of the road, which would result from those sections not being completed in the proper time with the others.

The advantages anticipated from this course have not, in consequence of the extraordinary deep snows, and severity of the past winter, been fully realized.

Much work has, however, been done. The first payment to contractors was made on the first of January, since which time, three successive payments have been made. The work is now rapidly progressing, on most of the sections. The remainder will be commenced as soon as the company have acquired a title to the land, which it is believed will not be long, as the legal measures for effecting that object, rendered necessary in those cases where the parties fail to effect a compromise, are in a train of execution.

It is proper to state, that the sections of the road on which the work is not now actually progressing, are, with one or two exceptions, of the lighter and less expensive character, and the delay in obtaining the land will not therefore prove as serious an inconvenience, as it might under different circumstances.

The contractors are efficient, business men, of much experience in their profession, and well recommended upon other works where they have been engaged.

In January last, proposals were received, and contracts made, for the delivery of the timber for the railway, or superstructure, sufficient to construct a single track. These contracts were made on favorable terms, and it is believed with responsible men, and no apprehensions of failure are entertained.

White Cedar and Red, or Norway Pine, is the timber proposed to be used. The rail timbers are to be exclusively of the latter material.

The width proposed for the rail track is the same as upon the Utica and Schenectady, and Mohawk and Hudson Railroads. A greater width was deemed desirable, but as the Auburn and Syracuse road is to be a link in the same chain with the roads mentioned, it was concluded to adopt the standard which had been established on those roads.

The timber for the railway is to be delivered, the most of it, the coming fall, and the balance early in the season following.

The distance from the principal depot, in the village of Auburn, to the site of the contemplated depot in the village of Syracuse, is 25.73 miles.

The total descent in that distance is 271 feet, making an average descent, supposing the inclination of the road to be uniform, of 10.54 feet per mile.

The maximum inclination of the grade line is 30 feet per mile. This extends only 8600 feet, or 1¾ miles, and occurs on the west side of the valley of the nine mile creek.

There are in the whole length of the road 31 changes in the inclination of the grade line, to adapt it, in the best manner, to the shape of the ground. These changes vary from a level to the maximum above stated.

There is, in general, the same average descent on all portions of the line. This appears from the fact, that the grade line of the road does not depart from a line of uniform inclination further, on the average, than 10 feet. The maximum being precisely 24 feet.

The several consecutive inclinations are united by vertical curves, of a large radius, to render the transition of the carriages and engines from one to the other as easy, and with as little resistance as possible.

The total amount of straight line and curves is exhibited in a tabular form as follows:—

		Miles.
Straight line, ...		15.976
Curved do. radius, 10,000 ft. and over, . . .	0.379	
5000 ft. to 10,000 ft.,	2.670	
3000 ft. to 5000 ft.	2.394	
1500 ft. to 3000 ft.,	3.067	
1000 ft. to 1500 ft.,	1.248	9.758
Total, ...		25.734

Comparing this with the Utica and Schenectady Railroad, which is among the most favorable in respect to straightness, and the result is as follows:—

	Per centage of straight line and curve.	
	Auburn and Syracuse Railroad.	Utica and Schenectad. Railroad.
Straight line,	62	74
Curved do. radius, 10,000 ft. and over,	2	1
5000 to 10,000 ft.,	10	15
3000 to 5000 ft.,	9	7
1500 to 3000 ft.,	12	2
1000 to 1500 ft.,	5	
700 to 1500 ft.,		1
Total,	100	100

It appears from the above that nearly two thirds of the whole extent of the Auburn and Syracuse Railroad is straight line,—the relative amount of straight line being but 12 per cent. less than upon the Utica and Schenectady road. The minimum radius of curvature, on the former, is 1000 feet, the curves ranging generally between 1500 and 5000 feet radius. In those places where the inclination of the grade line is greatest, curves of a lesser radius have been avoided.

In passing from one straight line to another, the transition, instead of being made as usual, by a single arc of a circle, has in general been effected by three or more arcs. the radii of the extreme arcs being greater than the middle, or intermediate ones.—This gives an approximation to the elliptic or parabolic curve. The engine and train, on entering a curve of this description, encounters the resistance caused by the change in direction gradually, being less liable to be thrown from the track, and on leaving the curve, the acceleration in the motion, on being relieved from the resistance, is likewise rendered more gradual. The method adopted in tracing the curves, rendered this arrangement perfectly feasible, and afforded a line in general better adapted to the shape of the ground.

The principal depot in Auburn is situated near the site of the State Prison. This point is favorably located for uniting with the contemplated road running west to Rochester and Buffalo.

From this depot the road is to be extended to the termination of the Auburn and Owasco Canal, to accommodate the hydraulic power which will soon be created at that point.

In proceeding from Auburn easterly, the line of the road passes, at the distance of 5 miles, near the village of Brutus. At the distance of 8½ miles it crosses the outlet of Skaneateles Lake, 4¼ miles north of Skaneateles village, and 1¾ miles south of the village of Elbridge. At the distance of 15 miles from Auburn, and 10¾ miles from Syracuse, it crosses, by an embankment, the valley of the nine mile creek, at a point two miles north of Marcellus village.

From thence it passes along the east side of the creek, intersecting the Seneca turnpike near the village of Camillus, and thence occupying ground midway between the turnpike and the Erie canal, through the village of Geddes, to its termination on the south side of the canal, in the village of Syracuse.

The difference, in the distance from Auburn to Syracuse, between the railroad and turnpike, is less than half of a mile, the turnpike being the shortest.

The ground on which the Railroad is located, was selected with the greatest care, and it is confidently asserted that no other Railroad can be made between the same extreme points which can compete with it

on any thing like equal terms, either as it regards the cost of construction or expense of transportation.

The section of country between Auburn and Syracuse is probably as unfavorable for effecting a good location for a Railroad, as any equal portion of the route between Albany and Buffalo. The streams, which are numerous, all run northerly. The ridges and valleys of course lie in the same direction. This peculiar formation of the country, as it precluded the possibility of following the course of the valleys, (the direction of the Railroad being nearly east and west,) added much to the difficulty of fixing upon the best location. These difficulties, it is believed, have all been surmounted in a manner to afford a Railroad which, when completed, will bear a favorable comparison with other portions of the line from Albany to Buffalo.

The descent upon the Railroad being towards the east at a nearly uniform rate of 10½ feet per mile, will favor the expense of transportation, the preponderance of the trade being in that direction. If locomotive steam engines of the most improved description are used, similar to the best recently constructed for the Baltimore and Ohio Railroad Company, a single engine, will be competent to convey from Auburn to Syracuse in the space of two hours, a *nett* load of 150 tons, and to return in the same time with a nett load of about one third of that amount.

The difference between the average and maximum inclination of the Railroad being but 19½ feet, will not exceed (provided a suitable reduction is made in the speed on the heavier grades) the range of the power of the best engines.

This difference is no greater than upon the Utica and Schenectady Railroad, and is much less than the same difference on on the Camden and Amboy, New Castle and Frenchtown, and Providence and Boston Railroads. These roads have their extremes nearly on the same level. The maximum difference on the first is 45 feet, on the second 30 feet, and on the last 37 feet per mile, the latter extending 5 miles. It is less, likewise, than the same difference on that part of the Baltimore and Ohio Railroad between Baltimore and the Parr ridge.

The average inclination from Auburn to Syracuse, is the same with what is usually termed the *level* portion of the Mohawk and Hudson Railroad, situated between the inclined planes. The greatest departure of the grade line in the latter case, from a line of uniform inclination, is 50 feet. Upon the Auburn and Syracuse road it does not exceed, as already stated, 24 feet.

The ground on a very considerable portion of the line of the Auburn and Syracuse Railroad is exceedingly well adapted for forming a firm and substantial road, being composed principally of gravel and loam, and loose shell rock, which is generally of easy excavation. On that portion of the line located upon the side hill, along the valley of the Nine Mile Creek for a distance of four miles, Gypsum, or Plaster of Paris, is found in the excavation, in considerable quantities. Nearly all the solid rock which is required to be excavated in forming the road bed, appears thus far to be of that material. This is deemed very favorable, as the value of the plaster, if disposed of at the usual prices, will cover the cost of its excavation.

The cost of constructing the road cannot now be correctly stated. The general rise in the value of labor, Railroad iron, provisions, &c., which has taken place during the past winter, will have a tendency to enhance the expense.

From the facts before me, it is probable that the cost of grading, masonry, &c., for a double track, together with that of the superstructure complete for a single track, will not exceed 12 or 15 thousand dollars per mile.

It is contemplated to form the road bed in a substantial and permanent manner.

Lime stone is the material principally used in the various structures, and is obtained in any quantity, in the vicinity of all parts of the line, of the best quality.—The bridges are few in number, and of very limited space.

The total value of perishable material used in forming the road bed, will not probably exceed for the whole road the sum of $3500. This, it is believed, will have an important and favorable influence in the cost of repairs.

In the location of the Railroad, throughout its whole extent, particular regard was had to the prospect of its becoming a portion of the great line of rail way from Albany to Buffalo, and all considerations of a minor and merely local character were made to yield to this one paramount object. To the liberal and enlightened views of the Board of Directors in this respect, the public will hereafter be greatly indebted.

The road will be completed and may be put in operation, it is confidently believed, if no unexpected difficulties occur, previous to the month of September of next year, in time for the fall business.

Respectfully submitted,

E. F. Johnson, Chief Engineer.

Auburn, April, 1836.

We are obliged to the friend who furnished us with the following statement in relation to the opening of Buffalo Harbor and the Erie Canal.

To the Editor of the Rail Road Journal.

Sir—I enclose you a tabular statement of the periods of opening the canal for the ten previous years, and also of Lake Erie. You will confer a favor by inserting the same in your valuable journal for future reference.

Yours, &c.

M.

D. K. Hor, Jr.

To the Hon. the Common Council of the City of Buffalo.

Your Committee, to whom was referred the annexed petition,* respectfully report, That, through the attention of the Hon. Geo. P. Barker, they have procured from the Comptrollers department, at Albany, an official copy of the dates at which the Erie Canal has been opened and navigated each spring at Buffalo and Albany, for the last nine years, a copy of which will be found hereto annexed. Your Committe are also indebted to the politeness of Gen. H. B. Potter, for an accurate statement, (in the correctness of which your committee have the most implicit confidence,) of the dates at which Lake Erie has been navigable, and *actually navigated*, to and from the port of Buffalo, each spring, during the last nine years, all which will be found exhibited in the annexed statistical table, the whole of which your committe trust will be found strictly accurate and satisfactory:—

Year	Canal opened at Buffalo	Canal opened At Albany.	Estimated time of the arival of boats at Buffalo from Albany.	Lake Erie open at Buffalo.	Opening of Canal in favor of Buffalo.	Opening of Lake earlier than canal boats arrive.	Opening of Lake later than canal boats arrive.
					0 days.	8 days.	0 days.
1827	April 21	April 21	April 29	April 21	0	0	0
1828	1	1	9	1	4	0	3
1829	25	29	May 7	May 10	5	22	0
1830	15	20	April 29	April 6	0	0	14
1831	16	16	24	May 9	6	6	0
1832	18	25	May 3	April 27	0	7	0
1833	22	22	April 30	28	1	10	0
1834	16	17	25	6	0	0	15
1835	15	15	23	May 8	1	7	0
1836	25	25	May 3	April 26	0		
					17	77	32

Showing that for the last nine years, the Erie Canal has been navigated at Buffalo in five instances, to wit: 1827, 1828, 1831, 1833, and 1835, as early in the spring as at

*The petition referred to, was from the citizens of Buffalo, to the Common Council. It had its origin in some remarks contained in the Governor's annual message relating to this subject.

Albany; and in four instances, 1829, 1830, 1832, and 1834, an average of four days earlier each spring. Thus showing conclusively, that property destined east, via. the Erie Canal, is not detained at Buffalo, though the "*ice*" *may* obstruct Canal navigation at *Albany* to a later period, also showing, that for the last nine years, Lake Erie has been navigable and *actually navigated* to and from *Buffalo* in six instances, to wit: 1827, 1828, 1830, 1832, 1833, and 1834, from eight to nineteen days *earlier* than property could have arrived at this city from the city of Albany, via. the Erie Canal, and in three instances, viz. 1829, 1831, and 1835, property could have arrived at this city from Albany, via. the Erie Canal from three to fifteen days earlier than Lake Erie was navigable from this Harbor, giving in the aggregate on the "*ice*" question an average advantage within the said nine years, of four and 2-9 days each spring, in favor of Lake navigation to and from Buffalo, over the Erie Canal arrivals from Albany. It will be observed by referring to the statistical table, that 8 days time is allowed for the first arrival of canal boats at this port from Albany on the opening of the canal in the spring, which is *within* the average as it is well known that from one to two days more time is required in navigating the canal on the first opening of navigation, than is the case after the towing paths and banks become settled, and farther your committee have not made any estimate of the delays incident upon breaches or obstructions in the canal, which in several instances have occurred previous to the first spring arrivals of boats at this place from Albany, all which is respectfully submitted. For the Committe,

W. F. Porter Taylor, Ch'n.

Feb. 26, 1836.

RAILWAY TUNNELS.

(From Mr. Gibb's Report upon the several proposed Lines for a Brighton Railway.)

An objection has been made generally to all tunnels—namely, that the air contained in them will be so contaminated by the noxious gas produced by the locomotive engines in passing through them, as to render it unfit for respiration. Whether this objection has ever been advanced, or at all supported, by any scientific man possessing sufficient chemical knowledge to enable him to judge correctly on the subject, is doubtful. The probability, however, is, that the fear of any injurious effects from foul air has originated in those who have witnessed the effects produced by steam engines in passing through the small tunnels on some of our canals; and if they have for a moment imagined that any similarity will be found in the effects in the two cases, their fears are quite justifiable. The tunnels on canals are commonly constructed of such limited dimensions, that it would be highly dangerous to attempt the same application of steam power as will be necessary on a railway; for instance, in the tunnel constructed by Mr. Telford on the Hare Castle Canal, the area above the water in the canal is only about one hundred feet; and even the Thames and Medway in transverse dimensions, perhaps the largest canal tunnel in England, has only an area of four hundred and fifty feet; while the smallest tunnel contemplated on the Brighton Railway, will have an area of at least six hundred feet.

In order to explain to what extent the air in a tunnel is contaminated by a locomotive engine passing through it, let us suppose a tunnel one mile in length to be traversed by a locomotive engine, and its train of a gross weight of one hundred tons. The experience of the Liverpool and Manchester Railway has shown that the average consumption of coke is considerably less than half a pound per ton for each mile it is carried on a railway; but taking the consumption at half a pound, the whole weight of one hundred tons will require the consumption of 50 lbs. of coke. It may be calculated that every 10 lbs. of coke will evaporate a cubic foot of water; so that the whole 50 lbs. will convert into steam 5 cubic feet of water in the distance of 1 mile. Now to convert into steam 1 cubic foot of water, requires 1,950, or say 2,000 cubic feet of air, then 5 feet of water will of course require 10,000 feet; and this will be the whole amount of contaminated air in one mile in length of tunnel. To determine the proportion of such an amount of foul air, and the whole air contained in the tunnel, we may take for example a moderate sized tunnel 30 feet high, and having an area of 800 feet. One mile in length of such a tunnel will contain 4,224,000 cubic feet; hence the contaminated air will bear to the whole quantity in the tunnel the ratio of 10,000 to 4,224,000; or it will be as 1 to 422. It will scarcely after this appear that any valid objection to tunnels, to assert that an injurious effect must result from the contaminated air, when we find that the quantity of this description of air, produced by the passing of the whole train, will be no more than $\frac{1}{422}$ part of the whole quantity in the tunnel.

Let us then venture to hope, that any prejudices which may now exist against the construction of tunnels upon railways will be dispelled, when we find that no injurious consequences will ever result from the foul air, or any other of the numerous evils which have been so forcibly dwelt upon by those who affect to perceive the most unhappy consequences from their adoption.—[London Mechanics' Magazine.]

From the London Mechanics' Magazine.

SCRIVNER'S WROUGHT-IRON RAILWAY CHAIRS.

Sir—In reading your interesting and valuable miscellany, I have been much gratified and amused with the different articles on railways; it seems as though the scientific and mechanical world were all intent on the subject, for it appears to be calling forth all the learning of the one and ingenuity of the other; and it must be allowed to be a subject of such importance, that science and art cannot, at this time be more usefully employed on any other. That there is and will be difference of opinion on the subject is no more than is to be expected; but amidst all the plans and suggestions that are, or may be advanced, the descriminating and skilful engineer will know what to choose and what to reject. The subject of rails and chairs, has occupied some space in your Magazine, and my object in now writing to you is to call the attention of railway companies and engineers (particularly those of the continent of Europe and America,) to a wrought-iron pedestal or chair, patented by Harry Scrivner, Esq., a gentleman connected with the British Iron Company. That a wrought-iron chair must be better than a cast-iron one, no one, I presume, will deny. Why else adopt the wrought-iron rail in preference to the cast-iron one? It cannot be simply owing to its extra length, and consequently causing fewer joints in a railway. The superiority of wrought-iron chairs to cast ones, must be to say the least, in proportion as wrought-iron is superior to cast-iron.—What the comparative strength of cast and wrought-iron is, I cannot exactly say, as it differs according to quality. But suppose a wrought-iron chair of 10lbs. weight to be equal in strength to a cast-iron one 20 lbs., and the cost to be the same in manufacture, the advantage to the purchaser is one-half in the conveying of the chairs from the *iron-works* to the place of destination; so that if a double railway one hundred miles in length take in cast-iron chairs of 20 lbs. each, 6,775 tons, it will take, in wrought-iron chairs of 10 lbs. each, but 3,387 tons 10 cwt.; which is such a saving in carriage, as one would think would not be lost sight of,—especially by the purchaser for the foreign market. Another advantage of the wrought-iron chair to the cast-iron one is its durability. As the oxydizing influence of the atmosphere is not so great on wrought-iron, as cast-iron, the durability of the one, compared with that of the other, must be in the ratio of corrosive liability.

Now, sir, as utility and economy must always be two leading considerations in all railway undertakings, the wrought-iron chair must, in point of saving, alone have ample recommendation.

Yours truly,

A Subscriber.

ADHESION ON RAILWAYS.

At a meeting of the institution of Civil Engineers (reported in the *Athenæum*) it is stated that a great increase in the power of the engines in drawing loads after them arose from the use of wrought iron rails, and wheels hooped with wrought-iron, instead of cast. The Planet engine was instanced weighing 7½ tons, and drawing 130 tons. The proportion or ordinary weight between the engine and the load, might be called 1 to 7, though 1 to 11 was a fair representation of power of traction as a maximum in favorable weather on a level. Case-hardened iron had been proposed for the rails, but had been abandoned in consequence of the chills, which answered perfectly at first, losing their effect by the repetition of the process, so that the case hardening was not equally effected.

New railway locomotive.—A locomotive carriage, having a very simple engine on a new principle, is nearly completed for the Greenwich Railway Company. The frame is constructed so that the wheels cannot deviate from the rails at any speed, and that their revolving motion can be instantly

changed to a *sliding* motion; thus the train being powerfully retarded by friction, is speedily brought to rest, and the risk of accidents to the spectators and passengers on the viaduct is materially diminished.—[Morning Herald.]

To the Editor of the Mechanics' Magazine.

Sir,—"When a heavy body is made to revolve in a circle, it has a tendency to fly from the centre, and this tendency is called its centrifugal force. An ounce ball attached to a string and whirled around horizontally, in the manner of a sling, may easily be made to break the string, even though it is strong enough to sustain the weight of four or five ounces; that is to say, the centrifugal force may easily be made to exceed four or five times the weight of the ball. The fundamental rule for comparing this force under different circumstances, is the following:—

1. The centrifugal force of bodies, revolving in a circle, is in proportion to the weight of the body multiplied into the square of its velocity, and divided by the diameter of the circle.

In the comparison of bodies revolving in circles with an *uniform velocity*, the following rules hold good, and are easily deducible from the preceding one.

2. If the weight and velocity of the bodies and diameter of the circles be the same, the force is the same in all points of the circle.

3. The centrifugal force is in proportion to the weight of the body multipled by the diameter of the circle, and divided by the square of the *periodical* time: that is to say, the square of the *time taken to make one revolution.*

4. The centrifugal force is in proportion to the weight of the body, multiplied by the diameter of the circle, multiplied into the square of the number of revolutions made in a given time.

5. The relation between the centrifugal force of a body, its velocity, and the diameter of the circle in which it revolves, is such, that the body would acquire its velocity, by falling, under the action of the force, through one fourth of the diameter of the circle.

By the assistance of this principle, we can easily measure the centrifugal force of bodies, provided we assume some known force as the *unit of force*, as in measuring distance we assume some known unit of length, a foot or a yard. The most convenient standard we can adopt, is the force of gravity at the earth's surface, because it is perfectly well known, and is in proportion to the weight or inertia of the body, as centrifugal force also is. It is required, then, to find the diameter of the circle in which a body must revolve once in a second, in order that its centrifugal force may be just equal to gravity at the earth's surface.

Let D= diameter required, C= the ratio of the circumference of a circle to its diameter=3.1415926—S=the height from which a body falls in one second=193 inches. Since the body by supposition revolves once a second, its velocity per second is =D C; and by the last rule, this is acquired in falling through D-4 under the action of the centrifugal force, which by supposition is gravity. Now by the laws of gravity, a body falling through S, would acquire a velocity of 25 per second, and the velocity acquired is in proportion to the square root of the space fallen through, therefore $D \cdot C : 2S :: \sqrt{\frac{D}{4}} : \sqrt{S}$, squaring all the terms, we have $D^2 \cdot C^2 : 4S^2 :: \frac{D}{4} : S$; by multiplying extremes and means, we get $S \cdot D^2 \cdot C^2 = S^2 \cdot D$; dividing by $D \cdot S \cdot C^2$ gives $D = \frac{S}{C^2} = \frac{193}{3.1415926^2} = 19.554$ inches, the diameter required.

Having ascertained this circle, let D= diameter of any other circle in inches—t= time of the body's revolution in that circle—G=force of gravity—to find F, the centrifugal force of the body.

By comparing this circle with the one whose diameter is 19.554, according to the third rule above stated, we have $G : F :: \frac{19.554}{12} : \frac{D}{t^2}$ multiply extremes and means, and $\frac{G.D}{t^2} = F \times 19.554$, and since we make gravity the unit of force, G=1, therefore $\frac{D}{t^2 \times 19.554} = F$, which expressed in words gives the following rule.

6. Divide the diameter expressed in inches by 19.554 times the square of the periodical time expressed in seconds, and the quotient will be the centrifugal force, gravity being one. For example, if a body revolve once in two seconds, in a circle whose diameter is eight feet, its centrifugal force will be 1.227 times its weight for $\frac{96}{2^2 \times 19.554} = 1.227$.

By comparing the centrifugal forces in these two circles, according to the fourth rule above stated, we have the following:

7. Multiply the diameter of the circle in inches, by the square of the number of revolutions per second, and divide the product by 19.554, and the quotient will be the centrifugal force, gravity being one. For example, if a body revolve three times per second in a circle of ten feet diameter, its centrifugal force will be 55.23 times its weight, for $\frac{120 \times 3^2}{19.554} = 55.23$. And from the first rule above stated, we adduce the following:

8. Divide the square of the number of inches which the revolving body passes through in a second, by 193 times the diameter in inches. Thus, if a body revolve, in a circle of ten inches diameter, at the rate of nine feet a second, its centrifugal force will be 6.043 times its weight, for $\frac{108^2}{193 \times 10} = 6.043$.

These rules suppose the body to be reduced to a point, and that the diameter of the circle described by that point, is known. This imaginary point is not the centre of gravity of the body. The rules for ascertaining it, in all cases, with mathematical precision, are exceedingly complex, and not within the design of your magazine; but with your leave, Mr. Editor, I will in some future communication, give the methods of ascertaining it in the simpler cases, and a method of approximation sufficient for all practical purposes.

Respectfully yours,

GYAS.

LOWELL, MASSACHUSETTS.

No. II.

By Henry Colman.

It is exceedingly curious and interesting to observe how closely associated are all the interests of society, interlocking each other in every direction, like a thickly woven web, of the most complicated texture, and united by a common, reciprocal, and indissoluble dependence. How much it were to be desired that men could better understand this; and see that the just prosperity of one branch of business is in a degree the prosperity of all; that there can in fact be no long and permanent monopoly of the great advantages of social life; that success and prosperity in any particular department of business have a tendency to diffuse themselves like the great elements of nature; and that the gains of any one man in the various connexions, fluctuations, and ever varying relations of society, become ultimately the gains of all.

There have been times, when men, under the influence of mistaken views, possibly, in some cases, under the influence of corrupt motives, have endeavored to excite animosities and prejudices among the commercial, manufacturing, and agricultural classes and interests. Now nothing could be more wrong in respect to each of them; and though government may sometimes adopt a partial policy, an unjust system of favoritism, granting peculiar privileges to some, to the prejudice or exclusion of other interests, yet it must be admitted as a great and incontrovertible principle, extending itself through every department of society, through all its multiplied ramifications, that the welfare of one part is the welfare of all; the prosperity enjoyed by any one portion, necessarily reflects its light upon the rest; and that any long continued and exclusive appropriation of any of the great advantages of life is no more possible than a continued and exclusive appropriation of light, or air, or water.

The mutual and reciprocal benefits to be derived from Agriculture by Manufactures, and from Manufactures by Agriculture, may be illustrated by a recurrence to some of the statistical details of some of the Lowell Manufactures, as published in a tabular sheet on the 1st of January, 1836. We

shall recur to them by way of illustration, premising only that our remarks must be brief; and that we are without the means of illustrating the truths with which we set out, so fully in detail, as we otherwise might have done.

The Manufactures at Lowell then, have collected a population of nearly twenty thousand in a spot where formerly there were not twenty individuals, all of whom are more or less concerned in, and all of them to a great degree entirely dependent on, the success of these Manufactures for employment, subsistence, and comfort. They are withdrawn from other pursuits, many of them from Agricultural labor, and they are to be supported by the products of Agriculture; for bread and meat must come from the earth. Being withdrawn from Agricultural labor, they render that labor more valuable; and congregating in this way, they consume more of the products of labor, than if they were scattered in the families to which they belonged. Besides this, they have introduced a large amount of foreign population, by whose extraordinary skill and labor we are greatly benefitted and vast public improvements are effected; and whose subsistence of course creates a new demand and market for the products of Agriculture. These effects are strongly perceptible in the immediate vicinity of Lowell; and a ready and high market is found there for all kinds of Agricultural products. This is certainly great gain to the farming interest; and valuable, not solely from the immediate profits, which it now yields, but from the inducement and stimulus, which it gives to improvements; and to a more extended and productive cultivation. There is another mode in which the cause of Agriculture here is indirectly but greatly benefitted. Much of the wages received by the laborers in these factories is remitted to friends at home; perhaps to extingush mortgages or incumbrances on the family estate, or to aid in improving the domicil.

Separate from the products of Agriculture consumed in the subsistence of the operatives of those establishments, let us look at some of the items of those articles which are used immediately in the process of the manufacture. Of cotton, 13,676,600 lbs. Of wool, 1,600,000lbs. Of wood 4690 cords. Of starch, 510,000 lbs. Of flour, for starch in the mills, printworks and bleaching, per annum, 3,800 barrels. Of charcoal, per annum, 500,000 bushels. Of Teasels, 3000,000. These amounts are certainly enormous; and when added to the bread, meat, vegetables, hay, oats, corn, milk, fruit, &c., &c., necessary for the consumption of the human machinery here employed, it is easy to see what demands are made upon agriculture for the supply of them; and what quick and profitable returns the supply of them brings back to the farmer.

The power of machinery is another circumstance that strikes one with astonishment on visiting these places. Operations which it would require years to accomplish by any other process, are here accomplished in a day. Operations which the combined power of a thousand men, could not effect, are here performed under the superintendence of a child. Operations which human power, singly applied, could never effect, are here daily and hourly effected by the simple revolution of a wheel or the pressure of a lever; and all this, with an exactness and precision absolutely perfect, I may properly add, sublime. Of the increased value given by manufactures to the raw material, and of the perfection to which the art is carried, I may be allowed to quote an example from Dr. Ure, in his treatise on the cotton manufacture. Such, he says, is the exquisite nature of the machinery in Manchester, England, that a pound of cotton is capable of being spun into 350 hanks; in which case, the yarn produced by it would extend 294,000 yards, or 167 miles; and that which, in a raw state, cost 3*s* 8*d*, sterling, (this remember, after paying the planter, the merchant, the freighter, &c., &c., an ample profit,) after being thus manufactured, would be worth twenty-five guineas.

The prejudices existing against machinery are fast losing their hold upon all reflecting minds; and its advantages upon *their* condition are becoming far better understood by the common laborers. Whatever tends to abridge the severity of human toil, and to abate the necessity of such an expenditure of human power, as is both wearing to the spirits, and destructive to human life, must be a general benefit. Whatever multiplies to an almost universal diffusion, not only the comforts, but even the harmless luxuries of life, whatever leave men more time to apply to the high purposes of intellectual improvement, or to innocent social enjoyment, must be a blessing. If the man who causes two blades of grass to grow where but one grew before, is to be pronounced a public benefactor, certainly he is not less so, who will cause four to grow with no greater expense of labor than the production of 1 blade formerly cost. Threshing machines have been, in some cases, the victims of popular resentment and frenzy; but there would have been equal reason in tearing down every blacksmith's shop in the kingdom, and breaking to pieces every plough and spade; for the plough and spade are equally machines; and as great advances upon the earliest instruments of tillage, as the threshing machine over the common flail. If the threshing machine debars some persons from their accustomed business, it relieves them from their accustomed toil; if it makes their labor less valuable, it renders their bread less dear; if it closes one source of income and subsistence, it leaves them time, strength, and opportunity to make choice of others. If the stick or the shell, or the improved machine, the spade, must be brought back to take the place of that admirable contrivance for saving human labor, the plough, then must nine tenths of the land, now in tillage and productive, be thrown out of cultivation; the means of human subsistence be in proportion diminished, and the price of what is produced enhanced. In *time*, as we have already remarked, an immense deal is gained; that is now accomplished in a single day, which formerly, years of patient and severe toil could not have completed. I know that cupidity and avarice may still lay claim to all this time, which machinery saves; but this does not necessarily follow; for wages are not reduced; and though the means of subsistence are increased the power of procuring it is proportionally extended; and unless men choose voluntarily to surrender their time, they can save much for rational enjoyment and improvement. I know, too, that there are those, who are disposed to tax human strength to its utmost limits under the pretence that men would abuse their liberty if they had more leisure. Many, undoubtly, would abuse it; but this is not a necessary consequence of such a relaxation; and while libraries, public lectures, books of general and useful knowledge, are so much multiplied, and means of improving, and innocent amusement are also multiplied, the danger of such abuses is daily lessened.

Let us remark in the next place, how, by means of improved machinery, the comforts and innocent luxuries of life are diffused. I am disposed to call elegance of dress, for example, when it is such only as befits our circumstances and means of expenditure, an innocent luxury. We have certainly high authority for regarding it with favor; for what is more beatiful, gay, splendid, variegated, brilliant and gorgeous than the flowers of the field; the scales of the reptile; the shells of the crustareous tribes; or the plumage of the birds? Now, how are these innocent luxuries multiplied and placed within the reach of all the industrious classes of the community; so that the most humble dwellings are often decorated with an elegance of furniture, which not many years since, the wealth of palaces could not have purchased; and the dress worn by many of the laborers in these establishments, and paid for too, by their honest industry, before it is worn, is such, as in times not far gone by, princesses of the realm would have envied. A pair of silk stockings, presented by the French Ambassador, to Queen Elizabeth, was a rare possession, to be brought out only on extraordinary occasions; and deemed a magnificent present. A taste for dress I know will be condemned by many ascetic and severe moralists. Pride of dress is, indeed, always contemptible; and can only be excused through want of understanding. But a strict care of the person, and a particular care of the dress, alike in respect to its neatness, propriety, and elegance, will be found not a mean auxiliary to purity of sentiment, decorum of manners, and innocence of conduct. Vulgarity and slovenliness of dress, and utter disregard of personal appearance, especially in the young, is too often but an index to grosser neglects, and the harbinger of moral delinquencies. Every thing on the other hand, which contributes to promote self-respect, increases a sense of the value of character; and a high sense of the value of character is one of the greatest securities of virtuous conduct.

There is another good, resulting from the modern improvements in machinery, which is not immediately obvious at first sight; but which is certain, and deserving great consideration. Much has been said of the division of labor; and the perfection to which by means of it, the arts have been

carried. This has been illustrated by a reference to the manufacture of a pin, which passes through various processes, each requiring or employing a different artizan. The same things occur in various other manufactures. The effect has heretofore been that one person has been confined for life to a single, minute operation; and that, most probably, an uninteresting one; and requiring in order to its expert practice a long and tedious apprenticeship. Such is, in many cases, the improved character of the machine employed in various operations, that the machinery itself, with a self-directing and self-adjusting power, performs many operations at one and the same time; and with a precision which the human hand or eye can scarcely be expected to attain and preserve. This is particularly illustrated in the whip and card manufacturing; and this is a great gain to humanity and a general benefit; since many operations, which were very trying to the health and spirits, which required long practice and intense application, are now performed by machinery under the superintendence of a child, after, it may be, a week's, or a month's instruction. H. C.

March, 1836.

From the Annals of Education for April.

FUNDAMENTAL PRINCIPLES OF THE PRUSSIAN SCHOOL SYSTEM.

We have recently conversed with several officers of the Prussian government in reference to their system of education.—To enter fully into this system and to understand completely any portion of it, it must be remembered that in this kingdom, the State, the Church, and the School, are inseparably united by numerous and intimate bonds. The government is at the head of the church and the school—if we may be allowed to use the latter term in the same general sense as the other, to include all the schools of the kingdom. It assumes the right to prescribe that every village must have its church and its school, that every man shall have the means of religious instruction—that every child shall attend some school. It does this on the ground that its citizens should be prepared to become good subjects, and that they cannot be so without receiving both intellectual and religious instruction. Its right is undisputed to preserve the bodies of its subjects from injury, and to have them trained to military exercises, and military skill, that they may be prepared to serve and defend their country by physical power, and prevented from becoming burdens for want of it. It claims the same right to guard their minds from debasement and corruption—to require, that they should receive that instruction which will aid them in gaining a subsistence, and being useful to their country; and that moral training, which will make them good subjects.

It does not seem to enter into the conception of any officer of State, or church, or school here, that order can be secured in a community without religion, or that morality can have any other sold basis than *Christian instruction and Christian training, in a Christian spirit.* In reference to mere secular instruction, the state prescribes the subjects and directs the modes of teaching through a number of instructors, and a body of inspectors appointed for this purpose, and appointed simply for their qualifications in this respect without any of those distracting questions and jealousies about party or sect which would embarrass our governments. But in regard to religion, it assumes only the right to decide, and to insist, that *instruction shall be given*; leaving to the clergy of each church the entire direction of the subjects and the manner of instruction.

The laws, however, decide one point absolutely, that religious instruction must take the first place in importance, and from a part of the business of this school daily, for not less than one hour in six. It will not permit that it should be confined to the weekly catechetical instruction of the clergy, which is given with a regularity and minuteness unknown to our clergy in general, and still less to the irregular and uncertain instruction of parents, so many of whom cannot if they will, or will not if they can, attend properly to this part of their children's education.

In the application of these principles the laws appear to secure every important point. Provision is first made for the preparation of Christian school masters, of the leading denomination, by the establishment of distinct seminaries for teachers, sustained by government, but regulated and inspected by the clergy of the respective churches. Where the parents in a school district are agreed in reilgious opinions, a teacher of the same sect gives religious instruction, under the direction of the pastor, and everything goes on with regularity and in harmony.

In places where each of two or more denominations is sufficiently numerous to *sustain* a school, the Government, although connected of itself with the reformed, or as it is now termed the evangelical church, consisting of the old Lutherans and Rejormed united, establishes and sustains schools for each. The Catholic Seminaries supply teachers for the Catholic schools, and even the Jewish children are furnished with an instructor of their own sect.

The most perplexing case is that in which the inhabitants of a small village or district are so divided that no single sect is sufficiently numerous to sustain a school. Here the laws direct that a "simultaneous school" shall be established; that is,—one in which children of *all sects* are united for the purpose of mere intellectual instruction. Still, the Government here insists, that religious instruction shall be given in connection with the school. Pastors are accordingly required to give instruction to the children of their respective flocks, during the week, and are subject to the supervision of the Inspector of Schools, in regard to the faithful performance of this duty; whilst no interference is allowed as to the opinions taught. There is so little jealousy between *good* men, even of different denominations, that the teacher of such schools is sometimes of one sect, sometimes of another.

It is in this manner that the Prussian system of education establishes certain fixed points of support, which leave room for universal and indefinite improvement, and which brings every institution of society in harmony with the rest. It secures permanent superintendents devoted to these objects, previously well-qualified, and gaining every year stores of experience for themselves, and the minister of education, by their regular tones of inspection and examination, and aided by the more detailed reports of local inspectors. It is in this manner they furnish every child in the land with a complete and harmonious course of instruction of the best kind, and *confer no power* on a subject, without endeavoring to instil the principles and form the habits of thinking and feeling which shall direct him in *using it aright.*

The nature of the Government also enables them to execute a law,—which however reasonable, might meet with resistance elsewhere,—to secure by civil regulation the attendance of every child on the instruction thus provided.

It would seem at first sight difficult to apply such a system to countries differently situated. It is certain indeed, that where the direction rests with the mass of the people, light must be more extensively diffused, and education better understood, and more highly appreciated, before such measures can be executed, or even adopted. It is not less true, however, that if we admit the fundamental principles, that the State has as much right to claim the mental, as the bodily services of its citizens, and to require suitable preparations for it, and that religious instruction is indispensable, as the basis of moral principle, and of a spirit of obedience to the laws, and of genuine liberty, the plans adopted to carry them into effect, are the most simple and excellent which could be devised.

Frankfort on Mayne, Nov. 27, 1835.

DEPTH OF MINES.

	Feet.
Kits puhl copper mine in the Tyrol mountains,	2764
Sampson mine at Andreasberg, in the Hartz,	2230
Valencia mine, (silver,) Guanaxuato, Mexico,	2170
Pearce's shaft, (copper,) consolidated mines, Cornwall,	1650
Monkwearmouth colliery, Durham,	1600
Wheal Abraham mine, Cornwall,	1410
Eiton mine, Staffordshire,	1380

The deep mines in the Tyrol, Hartz and Andes, above described, are all in high situations—the bottom of the Mexican mine is six thousand feet higher than the top of the Cornwall shaft. The deepest perforation beneath the level of the sea, and consequently the nearest approach to the earth's centre, has been made at the Monkwearmouth colliery, which is fifteen hundred and thirteen feet below the surface of the German ocean. Pearce's shaft (thirteen hundred and thirty-eight feet below the level of the sea,) was, until lately, the deepest in the world,—[Geology in 1835, (Mining Review.)]

From the London Mechanics' Magazine.

SELECT COMMITTEE OF THE HOUSE OF COMMONS ON ARTS AND MANUFACTURES.

(Continued from page 185.)

MINUTES OF EVIDENCE.

George Foggo, Esq., Historical Painter, examined:

I have been repeatedly employed to design for the application of my art to bronze and silver. That manufacture now in England is exceeding depressed; principally, I should suppose, in consequence of the want of copyrigh, on which account the French have very greatly surpassed us.—In England at the present moment the uncertainty of recovering in cases of piracy, and the great expense attending a lawsuit, make it almost impossible for any but men of great capital to undertake such works at all. When they are undertaken, as the sale is exceedingly limited, those articles are almost universally converted into silver. In France, in consequence of the cheaper law and the greater facility of recovery, a much greater proportion of works of that nature are cast in bronze. So doubtful is the recovery, and so great the expense attending it, that where otherwise 50 guineas would be expended on a design, not more than 5*l.* would now be ventured by the silversmith. As, for instance, in one case where the amount to be expended on a piece of plate was 800*l.* I received 8 guineas for the design. In other cases, where the finished work would amount to 200 or 300 guineas, the utmost the silversmith could spend upon the design has been less than 5*l.* If the copyright could enable the undertaker of such works to spread them to the amount of 20 or 30, he could then afford tbn times more on the design, employing none but the best artists, and rewarding them liberally. The main advantage of the copyright in France depends on the circumstance of the cheap law. I was lately in court in a case where the sale of spurious works was most clearly proved. The expenses, I was informed amounted to 100*l.*, and the award for the sale of five different and distinct prints was 15*l.* From what I recollect of such cases in Paris, I should say that the expense would have been under 15*l.*, and the award might have been 100*l.* It is, therefore, in France worth while (particularly when we consider the certainty of recovery) for a man of talent to claim his protection; it would not be so in London. Bronzé and silver are the same kind of manufacture, I should say: in most instances, bronze is first cast for the sake of the silver plate; that was the case with the celebrated Achilles' shield, by Flaxman. The original shield in bronze, most elaborately and beautifully finished, could not have been sold for much less, if any thing less, than the silver-gilt. But the taste is so much in favor of the more costly metal, that no one would give 3,000 guineas for the bronze, when they could get the silver-gilt for 4,000 guineas, although the value of the silver be not above 250*l.*; and I should say decidedly the bronze was most valuable; and I apprehend the taste of the public in that respect is deficient, inasmuch as gold and silver, having what I should term a positive color, are less applicable to the works of art than bronze, and still more particularly marble. In bronze it is more a work of casting. In fine works it is afterwards wrought up with great nicesty by the chisseller; in the above case Mr. Pitts, a very celebrated artist, was employed for that purpose. With respect to the mode of protecting inventions and designs in bronze, I think it, if it were worth the while of a man of talent to claim his protection, it would be fast carried out, according to our habits, by special juries, but under the present system this is much too expensive. By special jury, I mean a board of persons conversant with art, but subject, like our juries, to a challenge. Something like a *cour de prud' hommes*, or a board of competent arbitration, but doubt whether it would be right for them all to be artists. I also think that the period of the duration of copyright should be in proportion to the talent displayed, and the importance of the object. Some cases might not deserve three months protection, others would require 50 years. Some things deserve also to be better protected than others, in consequence of the great facility of copying them. All works that can be cast in plaster particularly require protection; for that which has cost the labor of months or years, and vast expense, may be re-produced by the plagiarist in a few hours. Such circumstances prevent the application of first-rate talent to any such productions. In a great measure the protection should depend on the talent of the artist. I consider that it would be for the interest of the public, for instance in a very beautiful work, that such a board or special jury should have the power of proposing, on the part of the public, to the artist, that his design should be bought up; but I have a very strong objection to the consideration of the interest of the public being paramount.—The circumstance of the Americans giving to their citizens an exclusive privilege of copyright, takes away all energy and exertion of those citizens. It has become scarcely worth while for an American to produce a work of talent, when the bookseller can get them from abroad for the price of a single copy. The French are superior to us in the accuracy of the execution of their work, but not equal in fancy and imagination; I have myself been employed to design for a work that has been sent over to France to be executed, and the execution was exceedingly correct. I should speak rather in favor of their execution and knowledge than their taste; for works in metal we still prefer that of the early period of Louis XIV. as more free and effective. I attribute the superiority of the French in correctness of drawing to the various schools of design established in every principal town, but more particularly in Paris; there schools are so various, that I do not think that any but a resident in Paris can fully understand the relative difference; they consist of the Royal Academy and the Government school of drawing; of private schools under an eminent artist, and of subscription academies, with no other than mutual instruction. Having resided seventeen years in that capital, and studied in one of their best schools, and at the Royal Academy, for eight or nine years, I am decidedly of opinion that private schools, under the most eminent masters, are greatly superior to any public establishments. The private schools are the original system of the instruction in France, as they were in Italy during its greatness. These schools are generally intended for the higher branches of art; but persons who do not evince talent of a high order, naturally fall into the employment of manufacturers. There is one school in Paris for the instruction of artisans employed by manufacturers. Each department has also something like a school of that kind; I am afraid it will be found they produce very little of that which may really be called talent. The national course of instruction for artists in France is very superior to the usual means in England; it consists of private schools, which system bears the most national character of any.—Every man of talent, as an artist in France, is supposed to owe much of his reputation to the pupils he produces; his object is to produce men of superior abilities, but the school gets popular, and the system is so well understood, that the number of students becomes very great, and from their superiority they are, when interest does not interfere, appointed teachers in the Government schools, and give a general tone to the talent of the country as far as circumstances admit. The Government schools are very inferior to the others in utility. The private establishments have the spirit of the country in them much more than the Government schools, for the Government schools are founded on one system, and, with one or two exceptions, all follow the same course; they do not fall into the wants of the times and the people so much as the private establishments. I do not mean that they are in name national schools, but they are the schools that give a national character to the French artists; which character is materially checked by the control of Government administration. In France, Government interference in positive instruction is injurious. The encouragement given to art in France is principally from the liberality of exhibitions, and most particularly of the libraries and the museums. The opportunities of study in the libraries and museums are far superior to any thing in this country. I may mention, in proof thereof, that the works of Flaxman, of Mr. Hope, and the publications on Etruscan vases of Sir William Hamilton, were shut up in private collections in England, and produced little effect on the public taste; but being placed in the libraries in Paris and other towns, where not only artists, but the public, had free access, the knowledge and taste of Flaxman and Hope became there generally appreciated, instead of being, as in England, confined to a few. A fine example of their museums was that of the French monuments, where, in appropriate halls, samples of French statuary of seven successive centuries, afforded an excellent opportunity of studying the taste and the history of the nation. That of mechanical machines is also of great utility. Museums, I apprehend,

must be the permanent and all-important sources of taste. Public lectures on the great principles of design and taste may be advantageously added thereto; and from the necessity of the case, another country being so greatly in advance of us in those branches, schools for the instruction of mere outline, and still more of the rules of perspective, would produce very great and beneficial effect. I certainly do think that much advantage would be derived from instruction in the proper simple rules, without shackling the taste; but it appears to me that good taste is so essential to the interests of the community, that museums should be provided at the national expense; but practical skill being an advantage of a more individual nature, ought rather to be paid for (moderately) by the individual. The general taste is decidedly higher in France than in England, but superior taste and imagination more frequent in England. I account for the distinction from this circumstance: I think the arrangements of Louis XIV. and Colbert have placed such fetters on imagination, that the utmost that instruction can do in France is to inculcate fixed principles and precision of execution. In the fourth year of the republic, under the Convention, schools of various kinds were instituted. Exhibitions and prizes were also decreed on a liberal scale, but they were ultimately counteracted by the re-establishment of the Academy, similar to Louis XIV., and the occasional injudicious interference of the Emperor. There has been no alteration in the Academy of Arts from 1800 till the present moment, except the exclusion of foreigners from the prizes, and a few minor bye-laws. I conceive that the fixed principles and correctness of execution are all that can be properly conveyed of instruction to an artist. They are all that can be wished for when competition is encouraged; and without free competition art is stifled, therefore it is absolutely essential. With regard to the departmental schools, if the appointments of professors were popular they might do a deal of good; but when I have seen an old man of 62 or 63 appointed to one of those schools, not for the good of his pupils, but to save him from starving, I cannot expect much good therefrom; when I have known, in the principal school for the mechanics of Paris, a man of the highest talent, M. Peyron, after 25 or 30 years' exertions in the under professorship, superseded in his claim to the higher professorship by a friend of the Minister, I find a total want of that principle which free competition and proper elections would have carried out. The reason I think superior taste and imagination more in England, is on account of the restriction in France, where, being under the Minister of the Interior, all follow one system and routine. In England, competition is created by commerce, which frequently brings a man from the humbler branches of manufacture to the highest stage of art, such as Martin, Muss, Bone, Bacon, and Banks. In fact, the French attempt to teach that which is probably not within the strict limits of teaching, and interfere a great deal too much. The positive, the undeniable, fixed, and positive rules of art, such, for instance, as perspective, anatomy, proportion, and perhaps botany, and those things which connect arts with manufactures, in which the principles are undeniable, should, of course, be taught. I think it almost as necessary for a people to possess a knowledge of those points, as to know how to write; I consider it a second way of reading all the beauties and merits of nature. The deficiencies, both in England and France, which still exist, are, first, the deficiency of correctness of perspective, even where correctness of outline is otherwise generally attained; perspective is often little understood in other countries, but is particularly neglected in England. Secondly, a very imperfect knowledge of the history of the arts and of commerce, their effects on each other, and on the state of nations, and thence false theories. The relative influence of the taste of Paris and London is this: the taste of Paris spreads all over France almost like lightning, while that of London is very much counteracted by the different habits and influences of our commercial towns: for this very reason, museums exactly similar might be established in France without any material injury; but museums in England would be best under the direction of a general board, but modified by the management of men capable of applying them to local purposes. If the town of Liverpool had a museum, it certainly would not, if left to the management of a local board, be similar to a museum in Birmingham or Sheffield, and it would be right that they should not be similar. A knowledge of mineralogy might be exceedingly useful in one town, and perfectly useless in another. Objects of general utility, of general taste, such as fine representations of the most beautiful pieces of sculpture, objects of taste, such as vases and ornamental designs in general, might be exceedingly useful in them all, but each would superadd what was of local interest in proportion to its connexion with different countries, and the manufactures on which it depended.—A local administration should be under a general control, or the control of a general board, in order to prevent local interests from holding too great an influence in the elections, and contracted views in the management; for I am greatly mistaken if, under a well controlled representative system, the arts are not capable of disseminating knowledge in fifty ways that have never yet been attempted, and I am also strongly impressed with the notion that they should tend to a general improvement of the morals of the people as well as of their intellect. I have no doubt that, under a proper general board with local management, they would be highly capable of both. Some of our manufactures far excel others in the merit of the designs, and this is usually in proportion to the difficulty of copying them, as the injury of a deficient copyright is therein less felt. I should instance, particularly, the japan manufacture, where the designs are more exquisite than any thing produced abroad. The excellence of a design is partly to be attributed to the difficulty of copying, inasmuch as it is an impediment to the plagiarist, and consequently a protection to the original designer. In the case of the japan manufacture, in consequence of the difficulty of the manual operation itself, the thing is better protected, and I ascribe it partly to the system of encouragement and competition established in the manufactures themselves; the works in japan are, however, conspicuously defective in perspective. I mention this to show, that of all the branches that ought to be taught, that of perspective is one of the first, inasmuch as it is not readily to be obtained. Each manufacturer in the japan trade has his own designers and painters. Designing is not a trade by itself, by which persons get their livelihood, that is, to furnish patterns to the manufacturers of designs in paint, not at least in Birmingham; what there may be in London I am not acquainted with. In that particular line the designs are very superior, but there are inaccuracies from want of instruction. At some interval of time and distance I examined the French and English japan works repeatedly, but not lately; there are no French ones that can at all compare with ours. The French shun the competition, though many individuals in France are anxious to introduce our japan articles in France at present. We have the advantage in both material and design; we are not equal in execution to the Asiatics, but superior in design. Mechanics' Institutions would be so far more beneficial than any school of design, that they would convey to pupils knowledge in chemistry or mechanics or design, according to their natural genius. They would do exceedingly well if you could manage the election of the professors; but in that case a member of an Instituiton is more likely to be elected than one not a member; it is therefore local talent which gets the influence, which is not so good as a person confirmed by the approbation of a general board. If the Institutions would agree to be subjected to the decision of a board in London, that much good might be effected. The advantage Mechanics' Institutions would derive from the parent Institution is, they would collect a variety of models, which they cannot now obtain.—Therefore, in this country, where you have three or four branches of trade carried on, in Manchester, and in some places almost every branch of trade, you would not confine it to a school of design only, but make it one branch of what would be a drawing class; those who have a taste for chemistry would be good preparers for the materials of printing, and so you would make it useful.—Another way might also be easily accomplished, by placing museums under the direction of men capable of communicating instruction.

(To be Continued.)

The wear of Rails of the Manchester and Liverpool line was stated to be 1-20th of an inch in depth per annum. The flanges rarely come in contact with the rails; one of the oldest wheels being taken off a carriage, the marks of the turning tool was found on the flange.

APPLES FOR STOCK.

We have from time to time published accounts of experiments in fattening pork with apples, which has been done with success and profit. The use of apples as food during winter for stock, has been abundantly successful during the past winter.

Several of our acquaintance have used them for this purpose, and consider them a valuable acquisition to their stores of fodder. Mr. J. Bacon, of this town, informs us that he has fed them out daily to his sheep, and has seldom had a flock of sheep do better during a winter. Several other farmers, who have had two or three hundred bushels, have used them with their hay with good effect. Here then is another reason why farmers should not only preserve their orchards, which they now have, with care, but also set out more, and such kinds as will keep well during the winter. An orchard may be considered as a fixture. When the trees once arrive to the bearing age, they require but very little care to keep them in a thrifty condition. They may be considered as a permanent crop, always planted out, and always ready for the summer.

AGRICULTURE, &c.

AGRICULTURAL BANKS.—The following communication of W. P., is worthy of attention—especially from the agricultural community. We are fully of the opinion, that the Banking System should be regulated by a general law which will allow every citizen to participate in its benefits.

Any individual, or number of individuals, who desire, should be permitted to receive money on deposit, and discount notes at such rates of interest as may be agreed on by the parties.

There should be an *established* rate of interest for all cases where the rate is not specially agreed upon, and also, for all institutions and companies having the privilege of issuing bills, or paper, to an amount exceeding their capital; and further, the private property of stockholders should be holden for the redemption of all issues.

The plan here recommended by W. P., is to us a novel one, and we should be pleased to have the opinion of others in relation to it.

From the New-York Farmer.

ON BANKING AND PAPER CURRENCY.

It is unfortunately too evident, in every debate on this subject, that "preconceived opinions usurp the place of facts, and speculations as unsubstantial as the 'baseless fabric of a vision,' are substituted for correct observation."

The opinion of the mass of our citizens, that to grant monied charters is anti-democratical, has no doubt been given very honestly; but they appear not to be sufficiently informed on the subject to know, that when a given number of charters have been granted, restriction becomes aristocratical, and extension democratical.

Before the introduction of paper currency, it was a very rare occurrence for any man to rise from a state of poverty to wealth and influence; those who were poor had ever to remain in that condition, and were considered by the wealthy as their slavish tools.

Banks, when legitimately established, may be considered as store-houses, wherein those who have more money than they can use to advantage, deposit the surplus, to be loaned to enterprising individuals, who can use it profitably. If banks were restricted to specie issues, there would be no banks established; for the rent of buildings sufficiently secure to keep safely the immense amount of specie to bank to any extent, including clerk-hire, transit of specie, &c. &c., would absorb all their profits. It is, therefore, on their paper the profits are obtained, and the government ought never to interfere, excepting so far as to secure the public against loss.

It is an extraordinary fact, that no civilized nation has ever attained its liberty permanently, unless subject to a system of paper credit; and so closely does the paper system appear to be interwoven with this sacred cause, that it may safely be asserted no nation can long retain its liberty when paper credit is destroyed. Its operation, too, is so simple, that it appears to have been overlooked by our long-sighted party politicians. A great number of individuals, whenever paper credit is established, are constantly breaking through the line between poverty and wealth, who are gradually ascending the scale of society, and carrying through nearly all stages their democratic feelings, at least until they arrive at the summit, when most of them become aristocratic. It is this class, who are constantly contending with the over-grown wealth and influence of old families, that have neutralized the aristocratical power in England, sustaining the principle of liberty, and enforcing a liberal construction of the laws. Let their paper credit be destroyed, and the nation deprived of the influence of that portion of the democracy who are rising from poverty to wealth, and those who are now wealthy would soon combine and tyrannize as much as before paper issues were established. A similar effect would ensue in any other country.

Our agriculturists are deeply interested in the monetary system, as much beyond any other class of citizens, as their annual surplus is larger. As banks are now established, they confer very little benefit on the farmer; and so far as their interest is concerned, they could do quite as well without them. It is truly surprising that the agricultural interest of America has been so generally neglected by our State legislatures, and the United States government. But it is still more singular, that our farmers should coolly look on, and see every other branch of industry seeking for monetary assistance, when as a class they have struck out no means by which they can partake of similar privileges. Capital, and facilities for raising loans, are as essential to them as to merchants, yet no system has been adopted for their benefit.

I would suggest a system for agricultural banking, which may appear crude, but will probably lead some master mind, having more talent and leisure than myself, to improve upon, and carry out to a more perfect system.

I would previously warn our farmers, if they value the existence of our democratical form of government, to put an end to our present mode of banking by specific charters; for so sure as this system is continued, so sure will our legislative bodies become so corrupt, as to be the disgrace of the age in which we live, and to the total prostration of our admirable form of government. The less a government interferes with the circulating medium of a country the better, as their interference ever produces much embarrassment in monetary matters. Banks should be permitted to go into operation under general laws, not by specific charters. This no doubt would have been effected long since, if very many of those who have the power to grant charters were not corruptively interested in the grants made.

Self-interest is so general, and so powerful a motive of action in man, that to expect to have a pure legislative body, with the means of corruption ever before them, is truly absurd. Let us then remove, as far as possible, all means of temptation; and as granting monied charters is one of the most fruitful sources of corruption, we should begin by abolishing it.

Let a general law be passed permitting property owners to establish banks predicated on real estate. The main provisions of such a law should be, that every property owner, who wishes to do so, should be permitted to deposit his deeds in the bank, and the bank have power to issue paper to the amonnt of the value of all the estates so deposited. Every property owner, after depositing his deeds, should have the privilege of discounting his own notes to an amount not exceeding a given portion of the value of his estate. The profits of the bank to be equally divided among the depositers of deeds. Provisions against fraudulent valuations, and many other regulations to keep in check the overweening selfishness of indviduals, will have to be made.

It must be obvious to our agriculturalists, that a great portion of those who buy estates, have not sufficient funds remaining to cultivate them effectively, and many thousands are kept poor for want of pecuniary assistance to put their lands in good condition. With such a system of banking they could improve their farms to any reasonable extent, and repay the loans as the

produce in after years should remunerate them for extra outlays.

Those who know any thing of farming, must be aware, that few farms will allow of taking up money at seven per cent., with the additional expense of mortgaging. This difficulty would be removed by such a system of banking, and as the profits would be divided among the depositers of deeds, the interest to be paid would be only the expense of the management, which need never exceed two per cent. Their paper, too, would have good credit, it being known to be based on a value ever equal to the issues.

W. P.

From the New-York Farmer.

FARMERS' WORK FOR SPRING.

Ploughing is the first great operation. On this subject, so familiar to farmers, no doubt they will disdain to be instructed. We have to say first, then, let your work be done as neatly and as evenly as possible. The appearance of this work well done, instead of the slovenly manner in which it is generally executed, besides the satisfaction which it gives the farmer himself, renders the after cultivation much more easy. As to the depth of ploughing, this must be in a great measure regulated by the depth of the soil. We believe no advantage is gained, but much injury oftentimes occasioned, by turning up a cold gravelly substratum and turning down a rich loam, out of the reach of sun and air. Our experience has satisfied us, likewise, that land fresh ploughed is much more favorable to vegetation than that which has been long turned up; and though the situation of the work may be such as not to allow of any postponement, it is desirable to sow and plant as soon after the ploughing as possible.

The second great operation is manuring. Too much manure may be given, but the usual error, is that of giving too little. We are satisfied in this matter, that the nearer manure is kept to the surface of the earth, so that it is covered or mixed with the earth, but barely to secure it from evaporation, so much the better for the crop.

Planting, especially of Indian corn, excepting in wet places, can hardly be done too early; the earlier the better; and if the ground were prepared for it, we would always put it in the last week in April, or at farthest, the first of May. Though some some of it may perish in the earth, such a contingency should be as far as possible guarded against, by using an extra quantity of seed—in this matter we are not in general half liberal enough; and also, where early planting takes place, there is in general, in case of failure, the better opportunity of repairing the deficiency. The corn early planted, may, after coming up, be cut down by an early frost; but usually it will start again, and have greatly the advantage of that which is planted late. Our own, and the experience of many of the best farmers, whom we have known, have satisfied us of the expediency of early planting.

The present season has been so backward, and so much time has been lost, that in many things the farmer must do as he can, not as he will. The cold winter and backward spring of 1780, were followed by an abundant summer; and with this experience, there is as yet nothing at present, to forbid the hope that the coming season may be as fruitful.

H. C.

This communication was received in time and should have appeared in the March number of the Farmer, but was by accident omitted. Although late, we give it now, by way of apology for delay.

Our worthy friend, "A PRACTICAL FARMER," will please accept our thanks for this letter and its contents. We have recently received many such tokens of good will.—A TEN DOLLAR note, accompanied by a valuable communication for the Farmer, from each its patrons, who appreciate its worth, would soon restore *that* department of our business to its condition before the conflagration.

From the New-York Farmer.

ROME, N. Y., Feb. 25, 1836.

MR. MINOR—SIR—I enclose ten dollars to pay arrearages, and in advance for the New-York Farmer.

As the season of the year will soon arrive for farmers to commence their operations on their farms, I should like to communicate to the public, some experiments which I have made on harrowing winter-wheat in the spring. And as I have never seen published, any thing of the kind I will state my manner of operation. As soon as the ground gets settled and dry on the surface, so that a team will not tread it up, I commence dragging my wheat with the drag I usually use in draging in grain, (the square drag,) and let it lop half, and follow immediately with a roller, to press the roots down if any are torn up. I always like to do it just before a storm, and if I want to seed my land with clover, I sow my seed previous to dragging, and have had it catch as well as when sown with spring grain.—And I think dragging has the same effect as hoeing does on corn, and have never seen any injury. I have tried it several years and find it increases the growth both of straw and head, and have seen one fourth difference by good judges at harvesting.

A PRACTICAL FARMER.

P. S. I should like to receive some information on the culture of turnips—the best kinds and the way of cultivating them.

Yours Respectfully.

☞ Will some one of our readers, who can give the desired information in relation to the culture of turnips, do us the favor to furnish us a statement for cultivation?—PROP. N. Y. FAR.

Annexed we give an account of the Lemon tree, to which we alluded in our last.

To the Editor of the New York Farmer.

OYSTER BAY, March 31st, 1836.

In compliance with your request, I give you the particulars of my Lemon tree, as accurately as my recollection will permit.

The tree was planted by Daniel Youngs Jr., deceased, in or about the year 1812. The orange from which the seed was taken was sent from South America, by Thomas Flecet: the orange stock was inoculated with lemon in the year 1830. Since then about 30 of the lemons have came to perfection.—There are four ripe ones upon it at present and about 20 green ones of various sizes, besides blossoms. The tree itself is about eight feet high, and the body about two inches in diameter. During the summer months standing in the open air, and in winter in a warm room.

Yours, &c.

DAVID YOUNGS.

From the New-York Farmer.

THE SEASON.

We have just closed a winter of most extraordinary severity. The mercury, in some very rare instances, may, in other winters, have sunk to a lower degree—indeed, the preceding winter, on the 4th January, 1835, where we had an opportunity of making observations, the mercury in Fahrenheit stood, for an hour, at 32° below 0, while the last winter, 1836, the same thermometer, in the same situation, never descended below 18° below zero; but when the continuance, as well as the severity of the cold, is taken into view, no winter on record can be compared with the one through which we have just passed. The winter of the year 1779–80, approaches nearest to it; then the snow continued, it is believed, even later than the present winter. The year 1673 was likewise very remarkable for the intensity of the cold. The winter just finished has been remarkable for the abundance and uninterrupted continuance of the snow; in many parts of the country, on Connecticut River, for example, at Greenfield and Brattleboro', the sleighing was uninterrupted for four months and a half; and the amount of snow which fell, exceeded, by actual measurement, any remembered, during an exact record of abovet wenty years. The spell, however, is now (25th of April,) fairly broken; and if we have suffered from a Russian winter, there is every promise of a Russian spring. The ground has no where been deeply frozen, and the grass has been ready for some time to start, as soon as the covering should be taken off, and it could see daylight.

The grain, where we have seen it uncovered, looks healthy and well set. It has been generally supposed that, where the ground continued covered with snow, it has proved favorable for wheat, but not for rye. We do not profess to understand the philos

ophy of this; and experience, the only infallible teacher, seems this year in a fair way to correct this impression; neither the rye nor the wheat appearing to have suffered at all from the season.

The winter has been dreadfully severe with the cattle; many, in different places, having actually perished by starvation; and others coming out in a miserable condition. The prices which hay and grain have commanded, induced many farmers, early in the season, to sell, to their own serious injury; having, through the desire of accumulation, been led to stint their own flocks. The winter has been so much longer continued, and so much more severe, than any calculations or expectations made it, that this has proved a fatal error to many. High prices occasioned by severity, are no evidence of prosperity. It is only a speculation upon the necessities and sufferings of the community; and where farmers are obliged to buy of other farmers, who, perhaps, have been a little more provident or fortunate, it is only evidence of general distress, and not of prosperity; the community certainly become no richer by this process; and for all the animals that perish or suffer through want, they are rendered the poorer. A strictly domestic trade, and a mere interchange among each other, however high the prices may be, adds nothing to the general stock of wealth. The basis of wealth rests entirely upon production, and the improved value for sustenance, convenience or utility given to those products by skill and labor. We do not mean to say, however, that it is other than a time of general prosperity in the agricultural community. In all the great markets all the products of the earth command extravagant price. Beef, in New-York Cattle Market, from 10 to 12 dollars per hundred. Pork, cheese, butter, flour, Indian corn, rye, wheat, &c., bear most extraordinary prices. Broom-corn brush, which for years was sold as low as 2½ cents per lb., now commands 14 to 15—and the wool market affords every promise of remaining firm. The advantages, however, in this case, are not all on one side. If it is a good time to sell, it is rather a hard time to buy. All the articles of living, beyond what the farmer produces, and many of them have become the actual necessaries of life, are dear in proportion; and labor never received a more ample recompense. Various causes of a fictitious nature, have no doubt contributed to these effects, the results of which ho human foresight can calculate. We refer particularly, as every one sees, to the immense extension of bank capital, and the flooding of the community with paper money, which, as long as public confidence is secure, works admirably; but which would work very perversely, if that confidence should be shaken. There is, however, one great consolation; if a currency based wholly upon credit, has extended itself to an extraordinary and perilous extreme, it has called out human labor to such an extent, and that labor has itself so much increased and improved the value of the products of the earth, has brought so much more land into cultivation, and rendered that, which has been long since subdued, so much more productive, that the actual wealth of the country, and, consequently, the means of sustaining public credit, have greatly extended, and are daily extending themselves in a most extraordinary manner. H. C.

25th April, 1836.

OHIO AGRICULTURE.

We are happy to lay before our readers the following letter from an intelligent correspondent on Western Agriculture.

From the New-York Farmer.

CHILLICOTHE, Ohio, Jan. 27th, 1836.

REV. H. COLMAN—DEAR SIR—Yours of 5th came in good season, but as there was no particular haste required, I have delayed answering until the present time.

The high prices of produce this season, will have upon the Agricultural community, a good effect to stimulate them to greater exertions, to realize more from their land than they have hitherto dared to hope for. It has raised the price of land throughout the country, and with it the ambition of land holders. Some of our farmers are so much elated with the prospect, that they confidently expect to average *one hundred and fifty* bushels of corn per acre; and one of our greatest feeders of stock told me a few days since, that he has a field of 20 acres that he should cultivate in corn; that he was confident that he would, if a good season, average two hundred bushels per acre. He intends to *drill* in the corn after the plan recommended in the 'Cultivator' some months since, (I have forgotten the page.) I was yesterday informed that a feeder a few miles below town, has sold his corn (in the shock) on the field, for *thirty-six* dollars per acre, to a Drover. The land on which it was grown could, last spring, have been purchased for twenty dollars per acre.

The average crop of wheat in this vicinity, take one season with another, is about twenty bushels, yet there has been as high as forty-five bushels to the acre in this vicinity. With the prices heretofore paid for work-hands, it has been considered that the cost of cultivating an acre of wheat, and putting in stack, was about five dollars per acre, which at the present price of wheat, ($1,) would yield the farmer about $15 nett profit per acre. There is but little rye cultivated, except for hogs, which are turned into the field before it becomes hard, and they are suffered to run upon it untill corn is hard enough to feed to them. It is generally sown early in the season, and is considered the best pasture during the fall and winter for cows and calves.

Buck-wheat and Barley there is but little attention paid to raising, as they are not considered profitable crops. From some cause (to me unaccountable,) the Potatoe does not flourish in this country. The most favorable seasons, and our best soil will not produce more than two thirds of what is considered a good crop at the East.

The root crops, such as Mangel, Wurtzel Rutta Baga, or common Turnip is not raised for stock, although I think our soil and climate both favorable to them. The common turnip, for table use, sells from 25 cents to one dollar per bushel, in our market. The sweet-potatoe grows very well in this part of the country, yet I think they are inferior to those that I was accustomed to eat at the East. We have a very great assortment of apples, which are sold in town, in the fall of the year, at 50 cents per barrel, of the first quality. Fifteen years ago there was a great many good peaches in these parts, but they are now scarce; pears do not do well. The fire-blight seems to destroy all the trees as soon as they are of a size to bear. We have a great abundance of plums of different kinds.

You ask if the water is good? Our water is pure, though hard. It is all more or less affected with the lime-stone gravel, through which it has to pass, in coming to to the surface. Our springs are equally affected with the wells. We have but little of the fever and ague, although we are by no means clear of it; as our country grows older, we have less. Our streams are more open—waste fields are opened for cultivation, and stock to consume the vegetation, which has made a great alteration within a few years. We have more or less of the billious fever every season, but we consider it a healthy country. For my own part, I never enjoyed better health in the Eastern States, than I have here for the last six years. As it respects stock cattle, there is very little difference between the common native stock here, and with you. We have to pay a higher price for improved cattle here than with you, but there is not sufficient difference to justify the expense of a trip to the East, unless a person wanted a large number. *Good* sheep are very scarce, and consequently high, although our common sheep are to be purchased for from 75 cents, to $1 per head.

I think some of taking a tour the coming spring through Indiana and the northern part of Illinois. From what I can learn of that country, I have no doubt but that there is great openings for Agriculturalists, for those too whose means are limited.

Any inquiries you may wish to make respecting this part of the country, I shall feel a pleasure in attending to, and any service that I can render you, I shall be happy in doing. Respectfully.

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From the New-York Farmer.

SILK.

Mr. Samuel Whitmarsh, of Northampton, who went out the last autumn with a view

to inspect the silk manufactures of France and Italy, and obtain what information he could respecting the raising and management of the worms, and the preparation of the raw material, has just returned, after an entirely successful tour. We are promised some full details of the result of his inquiries at a future time. In the mean while, we lay before our readers a few incidental facts, which will be reeeived with interest.

He says decidedly, that every thing which he has seen and learnt, favors the cultivation of silk in this country; that it may ultimately become one of the most important interests of the country; and will satisfy all reasonable expectations. As it respects climate and labor, two points in regard to which there has been much scepticism, we have a decided advantage.

As it respects labor, though wages and living are extremely low abroad, and the peasantry engaged in the raising of silk live in the most frugal and meanest manner, yet so much more is accomplished by a laborer among us than among them, that the difference in the expense finds more than an equivalent in the superior amount performed. Every thing done abroad in this way, is done in the most awkward and slovenly manner; the silk, throughout Europe, is cultivated in a small way, in cottages by humble means; and instances are not unfrequent, in which the peasantry travel five and six miles daily to obtain a supply of leaves for their worms.

The silk raised on the continent, is of a far inferior quality to that raised in this country; eight pounds of cocoons in this country, yielding a pound of silk, whereas in Europe, twelve pounds are required. This, he thinks, is to be attributed to our climate; the colder the climate, as long as feed can be found for the worms, or to speak in more classic terms, for the operatives, the better the silk. The American silk, therefore, is of a superior quality to the European or the Chinese.

Mr. Whitmarsh has brought with him several kinds of mulberry, to which he designs to give a fair trial. The white mulberry is not used, excepting as furnishing stocks for grafting. The mulberry, which he thinks is to be preferred to all others, is one known as Muries de Chine, or Chinese mulberry; but not the Morus Multicaulis. This plant is not yet introduced into France or England, but has been long enough in Italy to test its remarkable value. Its foliage, though not so large as that of the Morus Multicaulis, is yet much thicker and heavier; and it is comparatively proof against the coldest climate.

Of this mulberry he has brought a large quantity of the seed, which he warrants as genuine, and of last year's growth; and of which, he has deposited some for sale, at the store of Mr. St. John, No. 118 Broadway, at five dollars a paper, containing about 4000 seeds. Much of the Chinese mulberry, Morus Multicaulis, brought to this country, is heated in ovens by the Chinese, so as to destroy its vitality; and this is the general occasion of its failure to vegetate. We shall wait with interest for further communications from Mr. Whitmarsh, on a subject so important to the agricultural community, and to the whole country; and are happy that the enterprise has been undertaken by so exact and intelligent an observer; and one, too, who has so deep a personal interest in the concern. H. C.

April, 26, 1836.

From the New-York Farmer.

PEEKSKILL, 27th April, 1836.

Dear Sir:—A method of preserving apples, in this section of the country, has been introduced to some extent, which ought to be universally known. As I have not observed that it has been noticed in any agricultural or other paper, I give it to you, that you may make such use of the information as you may deem proper. The method is as follows:—

Take an ordinary flour barrel, and as much ground plaster or gypsum as will be re required for use, of course dependent upon the quanrity of apples intended to be thus laid down. Cover the bottom of the barrel slightly with the plaster, select the best and fairest fruit, and place them singly in the bottom of the barrel, so as not to touch each other, and cover them with plaster; and so proceed in the same way, until the barrel is filled; head up the barrel and place it in any dry and proper place. The fall pippin has been preserved in this way, until the month of June. I have practised this mode of preserving apples, and find it decidedly the best that I have ever tried. There is no difficulty in thus preserving the Newtown pippin, or any other winter apple, through the summer. The apple, when taken out of the plaster, is in a very perfect state, the flavor in no way injured or affected. To the farmer, this is no additional expense, as the plaster can be used upon his land.

I should recommend this to be done immediately upon gathering the fruit; let the barrels and plaster be taken to the orchard, and laid down in this way as taken from the tree; it is the least troublesome, and the apples will be longer preserved. The reason and philosophy of this method is very apparent, as the plaster absorbs the moisture from the apples, and excludes the atmosphere from the fruit, more effectually than other substance.

Respectfully yours,

W. N.

To the Editor of the New-York Farmer and American Gardeners' Magazine.

CONSULATE U. S. A.,
CAMPECHE, 17th March, 1836.

Dear Sir:—Still detained here by unavoidable circumstances, [which may probably exist 15 to 20 days longer, among other employments of my painful time, is the translation of certain portions of Volney's Journey through Egypt and Syria, augmented by notes of the Havana translator, in the Spanish edition of 1830, published in Paris. I send you now, in English, the 5th chapter, "On the Climate and Air of Egypt;" and hereafter will inform you of the application I shall make of the facts it contains.

Very respectfully,

Your ob't. serv't.,

HENRY PEMNE.

The climate of Egypt is justly considered very hot, as in July and August the thermometer of Reaumure steadily indicates 25° above the freezing point. 1 The proximity of the sun a(which in summer is almost perpendicular)is doubtless the principalcause of so much heat; but when we consider that other countries, under the same paral. lel of latitude, are cooler, we discover a second cause as efficacious as the first; and that is, the small elevation of the surface over the level of the sea. In respect to temperature, there ought not to be distinguished more than two seasons in Egypt, the Spring and Summer, i. e. the cool season, and the hot season. The heat continues from March to November, and even during the latter part of February, the sun at 9 A. M. is insupportable by an European.

In all this time the atmosphere is scorching, the sky scintillating, and the heat insufferable by those who are not accustomed to it. With the lightest clothing, and in complete repose, one melts into sweat, which is here so necessary that the least suppression is a disease; so that instead of the ordinary salute of "How do you do?" one should rather ask, "How do you sweat?" However, as soon as the sun departs from the zenith, the heat becomes somewhat tempered. The vapors from the grounds inundated by the Nile, and those brought by the North and the West winds, by absorbing the caloric diffused in the air, produce an agreeable coolness, and even biting cold, if we credit the natives and some European traders; but it must be recollected, that the Egyptians (who travel nearly naked, and are accustomed to sweat,) tremble at the least degree of cold. The thermometer (of Reaumur,) which, in February, maintains an elevation of 8 to 9 degrees above the freezing point, gives us exact ideas on this subject. It may be said that snow and hail are phenomena which have never been witnessed by many Egyptians of 50 years of age. With respect to the European merchants, they owe their extreme sensibility to the abuse of clothing with furs, which in winter is carried to so great a degree, that they commonly wear two or three coverings of fox skins, and which, even under the heats of June, induces them to keep on ermine.

They pretend that the coolness experienced in the shade is a more than sufficient

reason to clothe themselves with such excess—and, indeed, the currents from North and West, which almost always reign, greatly cool every spot where the rays of the sun do not fall—but the true and secret motive of this fashion is the fact that *furs* are the *lace and embroidery* of Turkey, and the favorite objects of Asian luxury. They are the signs of opulence, and the labels of dignity, since the concession of important offices is always accompanied with a fur skin—and equivalent to saying to the fortunate individual, that for the future, he is a Lord *of such rank*, that he has nothing else to do but *sweat*.

Perhaps some will judge that Egypt is very *unhealthy*, in consequence of the excessive heat, and of the marshy state of the country which lasts three months. In fact, this was the first thought which occurred to me on my arrival; and on seeing afterwards, in Cairo, the houses of the European merchants situated along the *Kalidj*, where the water lies stagnant until the following April, I persuaded myself that the *aqueous halitus* ought to cause them many diseases; bu t*experience contradicts* this presumption, *and the emanations from standing water*, so noxious in Cyprus and Alexandrietta, *do not produce any harm in Egypt*.

To me, the cause appears to be the continued *dryness of the atmosphere*, which is maintained by the vicinity of Africa and Arabia, where the humidity is incessantly absorbed; and by the perpetual currents of the winds, *which encounter obstacles*. b In proof of this opinion, is the fact that the *flesh of animals*, exposed to the North wind, even in summer, far from putrifying, *becomes as dry and as hard as a stone*. In the desert are found dried corpses, so light, that one man easily lifts with one hand the whole skeleton of a camel.2

Besides this great dryness of the atmosphere, its *saline qualities* are observed in all parts. The stones are corroded by natron, and in humid spots are found long chrystal ized needles, which may be mistaken for nitre. The well of the Jenuts Garden in Cairo, formed of bricks and earth, becomes covered with a crust of natron as thick as a dollar; and when the beds of the garden have been watered with water of the *Kalidj*, as soon as they become dry, white chrystals are seen shining on the earth, which could not have been brought by the water, as it gives no indication of salt to the taste nor by distillation.

This property of the air and of the earth joined with the heat, is what communicates, without doubt, to the vegetation an activity almost incredible to the inhabitants of cold climates. Whenever the plants abound in water, they develope themselves with prodigious rapidity. Whoever has been in Cairo or Rosetta, may have satisfied himself that the kind of pumpkin called *gara*, shoots nearly four inches in 24 hours.

But let us conclude with a very important observation: this fertile soil appears to be exclusive or *intolerant*. It is proved by daily observations that many exotic plants degenerate very soon. The European merchants are obliged every year to bring from Malta new seeds of cauliflowers, beets, carrots, and salsify. These horticultural vegetables, in the beginning, succeed admirably well, but if they are grown afterwards from their own seeds, they become wrinkled and diseased. The same has succeeded with prunes, pears, and peaches, which have been carried to Rosetta. The vegetation in this soil is too violent to nourish well, pulpy and spongy textures; in order to succeed it would be necessary to accustom them by degrees to the nature [of the soil] and to acclimate them by the force of great care in their cultivation. H. P.

Notes of Volney.—1. The Astronomer Beauchamp, has often observed 37° and 38° in Bassora, and this degree of heat reigns particularly in the greatest part of the shores of Persia, Arabia, and India; 32° and 33°, blood heat, are very frequent in Georgia and Florida, in America. Hence Egypt should be collocated among the countries of medium temperature.*

2. Nevertheless, we should notice that the air is much less dry along the coast than on the more elevated lands; so that in Alexandria and Rosetta, IRON cannot be exposed 24 hours to the air without being covered with RUST.†

Notes of the Spanish Translator.—* The temperature assigned by the Author to Egypt, is exactly the MAXIMUM of the Island of Cuba, CAETERIS PASIBUS, that is, in the shade. The mercury there rarely passes above 25°, even in the hottest months of July and August. Notwithstanding, in these same months, it constantly maintains itself from 23 to 24° at midday, without more variations than those naturally produced by the nightly absence of the sun, which causes it to descend sometimes 6°, and when least, 3°.

† This note is limited to the conjecture of the Havana man, that the saline productions noted by, are effects of the NITRIFICATION caused by the nitrogen of the atmosphere; but he does not suggest why or how the nitrogen becomes converted into nitric acid.

Notes of H. P.—a The PROXIMITY OF THE SUN cannot be the principle cause of the greater heat of summer, if our astronomers tell the truth in saying, that the earth is nearer to the sun in winter; nor can it be the cause of the greater heat of any season, or of any latitude, since, in all parts of the world, and in every day of the year, the nearer the sun that travellers have been on mountains, and æronauts in balloons, the colder have they found the atmosphere.

b The difference in the humidity of climate produced by the absence or presence of obstacles in the course of the winds, is remarkably contrasted by the extreme dryness of the air over the whole great peninsula of Yucatan, and the extreme humidity of the air in the adjoining small State of Tabasco. The North and North-West winds sweep over the level surface of Yucatan, from the Mexican Gulf to the Bay of Honduras, without encountering any elevated obstacle in their flight, and hence the rainy season, as it is called, endures but four months, and will not average more than a shower of an hour to every second or third day. On the contrary, the same winds, which pass over Tabasco, are stopped at its South and South-East boundary by the Chiapian mountains, (a N. E. spur of the great Mexican Cordelleras,) and hence are obliged to precipitate their moisture to so great a degree, that it is a common saying here, that in Tabasco it rains eight months, and showers the rest of the year.

c The Havana man adds, that "the analogies between the physical state of Egypt and of Cuba, or of the W. I. Islands in general, are so notable, that I cannot do less than indicate them at every step. The soil of Cuba does not easily admit foreign plants, although perhaps it does not reach the point of exclusion of Egypt. In fact, as the land of that Island is more varied, there are places in which it does not cost so much to acclimate the exotics of colder countries. I have eaten very good peaches produced in ground not seven leagues distant from Havana. Nevertheless, with respect to garden vegetables, they degenerate as much as in Egypt, but with this difference, that the new seeds, instead of producing wrinkled and infirm plants, vegetate with excessive violence, throw out immense leaves, and do not give time sufficient to season the nutricious juices—a circumstance which renders them extremely watery."

From the Genesee Farmer.

THE HESSIAN FLY.

One of our new subscribers in Ohio, has expressed a wish to see a dissertation on the Hessian fly, and as it may be acceptable to other of our readers, we shall attempt to furnish briefly, the most important of the information which we possess respecting it.

This insect belongs to the order DIPTERA, which includes all those insects having only *two wings*, and to the genus *Tipula*. The number of species belonging to this genus are numerous, amounting to more than one hundred and thirty of those hitherto known and described, and as many of these resemble each, care is necessary in observations on the Hessian fly, that no mistakes are made in identifying the species.

The following description of the Hessian fly, (*Tipula vaginalis tritici* of Mitchill,) is given by Dr. Akerly, in the American Magazine and Critical Review, of August, 1817. "It is a very small black insect, not so large as the moscheto of this place, with two fine transparent wings, from the roots of which, three ribs diverge, as through the leaf of a plant. The body, when examined by a microscope, is found to be divided into four segments, with a few hairs observable on each. The legs are of a yellowish cast, and transparent; the head inflected, with a short proboscis."

This, in common with nearly all other insects, passes through four distinct stages of existence: 1, the *egg*; 2, the *larva*, or maggot; 3, the *pupa*, or dormant state; and 4, the *perfect winged insect*. In this part of the country, it passes through two generations in one season, and attacks the wheat both in the spring and in the autumn. The fly, or perfect insect, deposits its eggs in the autumn, soon after the young plants appear above ground, between the lowest part of the leaf and that part which forms the main stem or straw, and as near the root as possible. "It resembles, at first, a very small white nit, and as it grows larger becomes a sluggish and almost inanimate maggot, of a white color. In this state, the proper and most natural food is the sap or juice of that kind of green wheat which has the most delicate straw."† It remains in this situation through the whole winter, apparently in the chrysalis state, without suffering any injury from the frost or snow; and in the spring, as soon as the weather becomes warm enough, and generally about the time vegetation has fairly commenced, it is transformed into the fly. In this state it performs the functions necessary for a continuation of its species. It lays its eggs between the straw or stem and the sheath which encloses it, as before described, and dies; and a new generation succeeds.

These eggs are soon hatched by the warmth of the season; and the young insects may be discovered in the form of small white maggots, within the sheath of the straw, and just above the lower joints. They here continue to feed upon the sap and tender fibres of the plant, by which it either withers and dies, or is stunted in its growth, so that the grain does not arrive at maturity. They are changed into the pupa state before harvest, and at this season, while the wheat is yet green, their presence may be readily detected by walking through the field, and pressing the heads with the fingers; those which feel soft, and unfilled with grains, are those which have been injured by the insect, and if the stalk be ex-

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* Its body is about one-ninth of an inch in length.

† Havens on the Hessian fly, in Bgric. Trans. New York, vol. 1, p. 77.

amined they will be found near the lower joints, somewhat resembling a flax seed, but smaller and slenderer, and of a dark brown color. They continue in this state until after harvest, and may be found upon the stubble in the field. Early in autumn they pass into their winged state, and lay their eggs in the young plants of wheat as before described.

When the fly is about to issue from the pupa into the state of perfect insect, it disengages itself by boring a small round hole through the brown case in which it is enclosed, and through the sheath of wheat just opposite to the place where it lodged, and this hole may be easily discovered as long as the stubble remains entire.*

With regard to the time of undergoing its final transformation the first time in the season, Judge Havens observes, "The size of the maggot when full grown, and the time necessary to complete its growth, depend in a great degree upon the quantity of nourishment it may obtain from the grain, and the number of maggots that may happen to be on one straw. This, according to the best of my observations, is somewhere between four and six weeks, which will bring the time, in which its growth will generally be completed, to the first part of June. But here the several causes of variation in the time of its being laid in the wheat, and of its completing its growth, both conspire to render this time so various, that some will be full grown, and others transformed into a chrysalis [pupa,] while others are small; and this circumstance has no doubt led many skilful observers to suppose, that there are two complete generations of the insect before harvest." The second time that the fly issues from the pupa, depends also in a great degree, on circumstances. "It generally," says Havens, "begins about the 20th or 25th of August, and continues in a greater or less degree through the whole month of September, but by far the greater part of the species are without doubt transformed into a fly, in the first part of this latter month."

By understanding the history of this insect, we are enabled to apply the means for its destruction, or for escaping its ravages. As it remains upon the stubble in the pupa state after harvest, the first means to be used, is, *to destroy the stubble soon after cutting the wheat.* This is to be done either by ploughing or burning. If by the former, the pupa is buried in the earth, and is thus prevented from changing to the fly; or if it changes, it cannot escape. Unless, therefore, the stubble be completely buried, the experiment will not succeed, consequently the deeper the ploughing the better. If by the latter, the stubble must be entirely burnt in order that the destruction may be complete, for, as the insect lies near the root, it will escape unless the fire be well applied.

But the best method of preventing the mischief occasioned by it, is to *sow so late that the wheat will not be above ground until the autumn fly has perished.* As the fly is in the state of the greatest activity early in September, the wheat which is up at that season, will be most liable to be destroyed; on the contrary, if the sowing is deferred till a month later, it will in a great measure escape. It is supposed that a single frost will destroy all the insects while in the state of the fly, and if the wheat is not up before such an occurrence, no danger whatever is to be apprehended.

In endeavoring, however, to escape one calamity, it is necessary to avoid the opposite evil. If the grain is sown too late, there will be danger, as is obvious, of its suffering from the effects of the frost of winter, or in other words, of being *winter killed.* Hence a middle course must be adopted. It may also be observed, that as there is a decided advantage in *early* sowing where wheat is not attacked by the fly, it would not be advisable where no danger of such attack is to be apprehended, as is the case in some places, to sow late in order to avoid its ravages.

The best evidence in favor of late sowing, as a means of preventing injury from the fly, is experience. Among other instances, two are related by a correspondent of this paper in Pennsylvania, (vol. 3, p. 321,) who waited till the first autumnal frost, when his grain was sowed and covered as speedily as possible. The result was, that the next harvest he had a good crop of excellent wheat, while his neighbors on each side of him, who sowed earlier, did not reap more than one-fifth of the quantity, and that injured by the fly. The other instance was this:—One half of the wheat crop was first sown, when a heavy fall of rain took place, which retarded the sowing of the rest until dry weather with frost; when it was harvested, the first sown was scarcely worth taking into the barn, while the latter proved an average crop of merchantable wheat. In these instances, the effect of frost in destroying the parent insect, is obvious.

Although the *autumn* fly is considered as the cause of the far greater part of the mischief, much injury is often committed by the *spring* fly. This is more especially the case where the wheat is sown too *late* in the fall, and is not of sufficient vigor the next season to out-grow the effects of the injury. This is an additional reason for selecting a medium period for sowing. An instance of the efficacy of this course, will be found on page 81, of the current volume of the Genesee Farmer.

In conclusion, therefore, we would recommend, as the best general rule for escaping the ravages of the Hessian fly, to sow, if the season and circumstances will admit, immediately after the first frost, on ground which has since harvest been kept clear from all vegetable growth* which might serve as a refuge for it, and never in any case to sow before the early part of October. But as additional facts brought to light by further experiments, cannot fail to be useful, we shall close this article by repeating the suggestion of Judge Havens: "Let those who may have leisure and curiosity on this subject, and who reside in different parts of the country where the insect may prevail, sow small patches of different kinds of wheat, as often as once or twice in a month, during the whole season, adjoining to some field of wheat or stubble, where the insect may be found in greatest number; and let its progress be observed on those different patches of wheat, and the result of the observations be collected and compared with each other."

* Havens.

From the Genesee Farmer.

METHOD OF GROWING FLAX SEED ON FALLOW GROUND, WITHOUT INJURING THE WHEAT CROP.

Plough the ground as early in the spring as practicable, then drag it lengthwise. Then sow not to exceed half a bushel of flax seed to the acre, and harrow it well with a fine toothed harrow. Nothing further need be done until the seed becomes ripe—then mow it down, and when dry, it can be drawn into the barn and stamped off with horses.

The ground is then in better order for wheat than it would have been had it lain idle. The crop on rich land will be from 10 to 15 bushels to the acre.

The above statement is no visionary theory, but has been successfully practised in Seneca county some years past. My information was had from a gentleman of the first respectability, by the name of Stephen Cook, who is a practical farmer, and has cultivated the above named crop with success. He resides at Fayette, Seneca county.

If this method of cultivation should succeed, I hope some of the fraternity of farmers will contrive to save the flax that grows on the stalk, by cutting it with a cradle or some other way.

It is true, the flax will be coarse in consequence of being sown so thin, but it might answer for cordage or coarse cloth.

It may be well to add, that the oil makers at Waterloo are in the habit of furnishing seed to the farmers in the spring, and receive the same quantity after it is harvested without interest. Oil makers in other parts would probably be willing to do the same.

ABNER F. LAKEY.

Palmyra, March 19, 1836.

PRESERVATION OF ANIMAL MATTER.

At a late meeting of the Asiatic Society, a human hand and a piece of beef, preserved by means of a preparation of vegetable tar, found on the borders of the Red Sea, in the vicinity of Mocha, and a specimen of the tar, were presented by Lieutenant Colonel Bagnold. In an accompanying letter, Colonel Bagnold observed—"During my residence as Political Agent on the Red Sea, a conversation with some Bedouin Arabs, in the vicinity of Mocha, led me to suspect that the principal ingredient used by the ancient Egyptians in the formation of mummies, was nothing more than the vegetable tar of those countries, called by the Arabs *katraan.* My first trials were on fowls and legs of mutton, and which, though in the month of July, and the termometer ranging 94° in the shade, succeeded so much to my satisfaction, that I forwarded some to England; and have now the pleasure to send, for the Society's information and inspection, a human hand, prepared four years ago by my brother, Captain Thomas Bagnold.—The best informed among the native Arabs think that large quantities of Camphor, myrrh, aloes, and frankincense, were used; these specimens will, however, prove that such were by no means necessary, as the tar, when applied alone, penetrates and discolors the bone. The tar is obtained from the branches of a small tree, or shrub, exposed to a considerable degree of heat, and found in most parts of Syria and Arabia Felix."—[Athenæum.]

Naval Gas-Lighting.—A steam vessel is fitting in the river, which is to be lighted with gas, on a plan suggested by Lieutenant Engledue, R. N. Two retors are placed in the fires under the boilers about two hours before dark, which will supply gas sufficient to burn the whole night, lighting the cabins, engine-room, and mast head. This may be fitted at a trifling expense, and without the least danger, the whole apparatus being on deck. Frequent accidents have occurred from steam vessels not being properly lighted at night.—[Lond. Mechanics' Magazine.]

TO CANAL CONTRACTORS.—Sealed proposals will be received at the Office of the Commissioners of the Illinois & Michigan Canal, from the 25th of May to the 6th of June next, for the construction of eight miles of the summit division of said Canal, extending from the point of commencement on Chicago River, to the Des Plaines River; and also of six or eight miles of the lower end of said division, extending from the mouth of the Saganaskee Swamp down the valley of the Des Plaines.

The work consists principally of deep excavation, a considerable portion of which is rock, and is well worthy the attention of contractors.

Plans, profiles and specifications, giving all the necessary information to those wishing to obtain contracts on this line, may be examined at the Office of the Canal Commissioners, after the 25th of May next; and contractors are respectfully solicited to make a minute personal examination of the work previous to sending in proposals.

By order of the Board of Commissioners of the Illinois Canal. Attest: JOEL MANNING,
Secretary to said Board.

N. B.—Any person wishing to procure copies of the above on letter sheets, can obtain them by applying at the Canal Office.—Chicago, April 19, 1836. m6 t25

PATENT RAILROAD, SHIP AND BOAT SPIKES.

☞ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.
Troy, N. Y., July, 1831.

*** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes.

1j23am H. BURDEN.

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap Shovels
150 do do do plain do
150 do do do cast steel Shovels & Spades
150 do do Gold-mining Shovels
100 do do plated Spades
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State street, Albany.

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron. 4—ytf

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

4—ytf H. R. DUNHAM & CO.

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation. J25tf

CHICAGO LOTS.

NOTICE is hereby given, that on the 20th day of June next, at the Town of Chicago, in the State of Illinois, the following described Property will be sold at Public Auction, to wit:

All the unsold Town Lots in the original Town of Chicago; and also the Town Lots on fractional Section No. Fifteen, in the Township No. Thirty-nine, North of Range Fourteen, East of the Third principal Meridian adjoining the said Town of Chicago. The sale will commence on the said 20th day of June, and will be continued from day to day, until all the Property has been offered for sale or disposed of. This property is held by the State of Illinois for canal purposes, and is offered for sale in conformity to the provision of a Statute Law of the said State, authorizing such a sale. The terms of sale are one-fourth of the purchase money to be paid in advance at the time of sale, and the residue in three annual instalments, bearing an interest of six per centum per annum, payable annually in advance.

Those who are unacquainted with the situation of the above mentioned Property, are informed that those Lots which are described as belonging to the original Town of Chicago, are situated in the best built and business part of the Town. Section Fifteen is a dry ridge, commencing near the harbor, and extending south, one mile, along the shore of Lake Michigan.

By order of the Board of Commissioners of the Illinois and Michigan Canal.

Attest, JOEL MANNING,
Treasurer to said Board.
Chicago, March 17th, 1836. 13—8t

PROSPECTUS

OF VOLUME II. OF THE

CHICAGO AMERICAN,

TO BE PUBLISHED SEMI-WEEKLY.

In proposing to establish a SEMI-WEEKLY paper under the old title, but with extended dimensions, the subscriber acknowledges the favors of the past, and solicits the continued patronage of a liberal public.—The reasons that induced him about a year since to establish his weekly paper, operates with renewed and increasing force in favor of his present design.—He shall endeavor, as it was originally intended, to make his paper American in all things; and by identifying itself with the interests and circumstances of Chicago—which from a recent wilderness has advanced to a population of thirty-five hundred—and of the rich, extensive, and rapidly developing country of which it is the emporium, he hopes it may "grow with their growth, and strengthen with their strength."

As a record of passing events, current literature, of the march of agriculture, commerce and manufactures, and especially of the progress of internal improvements, of which this State, by her recent passage of the act for the construction of the "Illinois and Michigan Canal," has commenced her great and auspicious system, it will aim, as ever, to be accurately and early informed, and thus endeavor to consult alike the tastes and wants of the community with which it is identified. With party, as generally understood, it will have as little to do as possible. Its politics will be the Constitution—its party, the Country.

With this brief explanation of its future course, and his thanks for the more than expected encouragement he has already received, the subscriber again ventures to solicit the continued patronage and extended support of all who may feel an interest in the principles here set forth.

It will be enlarged and otherwise greatly improved, and printed on superior paper, and forwarded to distant subscribers by the earliest mails, enveloped in a strong wrapper.

TERMS.—The AMERICAN will be published SEMI-WEEKLY, at $4 per annum, if paid at the time of subscribing; $5 if paid at the expiration of six months, or $6 if payment is delayed to the end of the year.

** Any person procuring five subscribers and remitting the pay in advance, will be entitled to a sixth copy gratis, or a deduction of TEN PER CENT.

Persons at a distance remitting a $5 bill will receive the paper fifteen months.

*** All sums to the amount of $10 and upwards may be sent through the Post Office, at my expense.

THOS. O. DAVIS.
Chicago, March 25, 1836.

*** Subscriptions and Advertisements for the CHICAGO AMERICAN will be received at the Office of the Railroad Journal, 132 Nassau street, by D. K. MINOR.

SMITH & VALENTINE,

STEREOTYPE FOUNDERS,

Are prepared to execute orders in their line, at 212 Grand street, New-York.

HARTFORD AND NEW-HAVEN RAILROAD.

From New-Haven to Meriden, eighteen miles of this Railroad is now located, and is expected to be ready for contract about the 25th of May. The attention of contractors is invited to this work. A more definite advertisement of the time when proposals are to be received, will hereafter appear.

JAMES BREWSTER, Agent.
New-Haven, April 27, 1836. m16—3t

[Editors to whom this is MARKED, are repuested to give it three insertions, and send their bills to James Brewster, President Railroad Company,

☞ THE NEWCASTLE MANUFACTURING COMPANY, incorporated by the State of Delaware, with a capital of 200,000 dollars, are prepared to execute in the first style and on liberal terms, at their extensive Finishing Shops and Foundries for Brass and Iron, situated in the town of Newcastle, Delaware, all orders for LOCOMOTIVE and other Steam Engines, and for CASTINGS of every description in Brass or Iron. RAILROAD WORK of all kinds finished in the best manner, and at the shortest notice.

Orders to be addressed to
MR. EDWARD A. G. YOUNG,
Superintendent, Newcastle, Delaware.
feb 20—ytf

RAILROAD CAR WHEELS AND BOXES, AND OTHER RAILROAD CASTINGS.

Also, AXLES furnished and fitted to wheels complete at the Jefferson Cotton and Wool Machine Factory and Foundry, Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to.

Also, CAR SPRINGS.

Also, Flange Tires, turned complete.

J8 ROGERS, KETCHUM & GROSVENOR.

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

RAILWAY IRON.

95 tons of 1 inch by ½ inch.
200 do 1½ do ½ do
40 do 1¼ do ⅜ do
800 do 2 do ½ do
800 do 2½ do ⅝ do
soon expected.

FLAT BARS in lengths of 14 to 15 feet, counter sunk holes, ends cut at an angle of 45 degrees, with splicing plates and nails to suit.

250 do. of Edge Rails of 36 lbs. per yard, with the requisite chairs, keys, and pins.

Wrought Iron Rims of 30, 33, and 36 inches diameter for Wheels of Railway Cars, and of 60 inches diameter for Locomotive Wheels.

Axles of 2½, 2¾, 2⅞, 3, 3⅛, 3⅜, and 3¼ inches in diameter, for Railway Cars and Locomotives, of patent iron.

The above will be sold free of duty, to State Governments and Incorporated Governments, and the drawback taken in part payment.

A. & G. RALSTON,
9 South Front street, Philadelphia.

Models and samples of all the different kinds o Rails, Chairs, Pins, Wedges, Spikes, and Splicing Plates, in use both in this country and Great Britain, will be exhibited to those disposed to examine them.

4—d7 1meowr

NEW-YORK AND ERIE RAILROAD.

TO CONTRACTORS.—Proposals will be received at the Engineer's Office of the New-York and Erie Railroad Company, in the village of Binghampton, on and until the 30th day of June next, for grading 69 miles of the Railroad, from the village of Owego, in Tioga County, to the village of Deposit in Delaware County.

Proposals will also be received at the Engineer's Office, in Monticello, on and until the 11th day of July next, for grading 48 miles of the Railroad through the county of Sullivan, extending from the Delaware and Hudson Canal up the valley of the Neversink, and thence to the mouth of the Callikoon Creek, on the Delaware River.

Plans and profiles of the line above mentioned, staked out in convenient sections, with printed forms of the contracts, will be ready for exhibition at the said offices twenty days before the days of letting above specified.

The Company reserve the privilege of accepting only such proposals as they may deem for their advantage.

New-York, 26th April, 1836.
15—tf JAMES KING, President.